HONG KONG MONETARY AUTHORITY
香港金融管理局

HALF-YEARLY MONETARY AND FINANCIAL STABILITY REPORT

September 2016

This Report reviews statistical information between the end of February 2016 and the end of August 2016.

Half-Yearly Monetary and Financial Stability Report
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1. Summary and overview

Global financial markets recovered shortly after the Brexit-related rout on expectations of further policy support. However, the increasing divergence between the liquidity-driven stability in the financial markets and longer-term fundamentals, particularly given the growing unusual economic and political uncertainties, could risk sowing the seeds for future financial volatility and disruptions.

Despite heightened global market volatility, the Hong Kong dollar exchange rate remained broadly stable. Loan growth picked up after a contraction in the second half of 2015. While the property market has shown signs of stabilisation, its outlook has become more uncertain. Looking ahead, the subdued demand for credit, depressed yields of safe assets and keen competition in the mortgage market could pose challenges for banks in managing their surplus funding, putting pressure on their profitability. Although the Hong Kong banking system has not been much affected by the Brexit vote, continued monitoring of potential international spillovers is required.

The external environment

Global financial markets were stunned in late June by the United Kingdom's (UK) vote to leave the European Union (EU) (Brexit). However, the sell-offs were orderly and later proved to be short-lived amid heightened expectations of further policy support from major central banks. While Brexit has so far caused limited market disruptions, its full impact will take years to show and will depend crucially on the outcome of the UK-EU negotiation and whether wider political fallouts can be contained. In the near term, the impact on the global economy should not be large, given the limited real direct linkages of the UK to the global economy. However, the European economy could still be susceptible to the Brexit shock given its fragility and the already difficult operating conditions facing European banks. In the event that Europe is significantly affected by Brexit, the second-round effects on emerging market economies (EMEs) could be larger given their dependence on export demand and investment from Europe.

In response to Brexit, major central banks have maintained, if not further loosened, their accommodative monetary policy. Nevertheless, concerns over major central banks running out of policy ammunitions are increasing, and some governments in advanced economies may find it tempting but politically difficult to implement further fiscal stimulus. Meanwhile, the US Federal Reserve is expected to normalise its monetary policy gradually, but the relatively more solid underlying strength of the US recovery means that global monetary divergence could at some point widen again. Looking ahead, increased demand for US treasuries amid negative sovereign bond yields, record-low interest rates in Europe and Japan, and expected resumption of monetary divergence could

provide support to the strong US dollar. In such a case, renewed downward pressure on oil prices and depreciation pressure on emerging market currencies, especially for those with weaker economic fundamentals, cannot be ruled out. The risk is that the increasing divergence between the liquidity-driven stability in the financial markets and longer-term fundamentals, particularly given the growing unusual economic and political uncertainties, could risk sowing the seeds for future financial volatility and disruptions. Financial disruptions, whether in advanced or emerging market economies, could quickly spill over to one another given their increasing interconnectedness. Box 1 (see page 23) analyses the bilateral spillovers between advanced and emerging market economies in the sovereign bond markets.

In East Asia, financial markets have also stabilised after a brief surge of volatility following the Brexit decision. Although the region saw more capital inflows recently as investors renewed their search for yield, the full impacts of Brexit, especially those on real activities through trade and direct investment channels with the EU, remain to be seen. Meanwhile, growth momentum in the regional economies continued to be constrained by sluggish external and domestic demand. In view of this, many regional central banks have eased their monetary policy recently to support growth. Going forward, the region's economic prospect will be subject to increased uncertainties in the external environment, including how US monetary policy normalisation and uncertainty surrounding the Brexit negotiations interact with global and domestic policy responses and dollar strength.

In Mainland China, economic growth continued to trend down in the first half of 2016 with tentative signs of stabilisation in the second quarter thanks to accelerated infrastructure and property investment, as well as narrowed declines in net exports. However, uncertainty over near-term growth prospects remains in view of the rapidly changing domestic and external environment. Domestically, the acceleration in supply-side reforms this year could be contractionary in the short run. Externally, Mainland's export performance will still depend on the pace of recovery in major economies. While the slowdown in economic growth and weak corporate earnings would continue to weigh on asset quality of Mainland banks, the provisions put aside by banks and their solid pre-tax profits should be sufficient to cover potential loan losses.

In the forex market, the renminbi exchange rate weakened against the US dollar and the currency basket compiled by the China Foreign Exchange Trade System. With improved market sentiment, volatility of the renminbi exchange rate has declined. Meanwhile, outflow pressures have eased with signs of stabilisation in foreign reserves. Following the marked cut back in external debt and foreign currency borrowing, the risk of currency mismatch faced by Mainland firms also reduced. Box 2 (see page 27) assesses the US dollar borrowing by Mainland enterprises using data of listed firms, and the potential impact of the depreciation of the renminbi on the credit risk of these borrowers.

The domestic economy

The Hong Kong economy has avoided a technical recession with quarter-on-quarter real Gross Domestic Product (GDP) growth increasing to 1.6% in the second quarter from -0.5% in the previous quarter. On the domestic front, private consumption growth strengthened from -0.2% in the first quarter to 0.9% in the second quarter amid a pick-up in service spending and a low base effect in the first quarter. Meanwhile, despite weak machinery and equipment acquisition, investment spending also strengthened in the second quarter on the back of stronger public and private building and

construction activities. On the external front, exports of goods rebounded in the second quarter, while exports of services remained soft in the first half amid weak inbound tourism. As total import growth exceeded that of total exports in the second quarter, net exports' contribution to real GDP growth turned negative in the second quarter.

Headline unemployment rate edged up to 3.4% in July from 3.3% at the end of 2015, mainly due to slower employment growth in the retail, accommodation and food services sector. The sector has been hit by the decline in Mainland tourists and moderation of domestic private consumption. Box 3 (see page 35) analyses the role of sectoral and aggregate channels in driving the overall unemployment rate.

Local inflation momentum has abated since April with the annualised three-month-on-three-month underlying inflation rate easing to -0.3% in July from 3.5% in April, mainly attributable to subsiding food inflation and slower increases in housing rentals. Looking ahead, upside risks to inflation are likely to remain contained in view of soft import prices and the modest local economic growth.

The Hong Kong economy will continue to face headwinds going forward. Externally, exports will be constrained by a continued slowdown in global economic and trade growth, potential longer-term global repercussions from uncertainties surrounding Brexit and the strong US dollar amid divergence of major economies' growth prospects. Domestically, the property market outlook is still highly uncertain with further ramifications to the domestic economy. The market consensus forecast of the real GDP growth in 2016 has been revised downward to 1.0% from 1.8% registered in March.

Monetary conditions and capital flows

Despite heightened global market volatility, particularly after Brexit, the Hong Kong dollar exchange rate remained broadly stable against the US dollar, trading within a range of 7.7529 and 7.7760 since March. Reflecting the strength of the US dollar, the Hong Kong dollar nominal effective exchange rate has again appreciated since May. During the review period, the Convertibility Undertaking was not triggered.

With the monetary base staying steady at sizeable levels, the overnight Hong Kong Interbank Offered Rate (HIBOR) fixing rates remained low at around 0.05% during the first half, and the three-month HIBOR fixing rate also stabilised at around 0.54% in the second quarter. Amid increased competition for mortgage business, the average mortgage rates edged down slightly to 1.90% in July from 1.93% in December last year.

After contracting by 1.8% in the second half of 2015, total loans increased by 2.2% in the first half of 2016. In particular, domestic credit picked up by 3.2% in the first half along with the recovery in economic activity in the second quarter. As household loan growth remained modest, household debt-to-GDP ratio dropped slightly to 65.8% in the second quarter from 66.5% registered six months ago.

Partly reflecting the strength of the US dollar and concerns about Mainland's economic prospects, both the onshore (CNY) and offshore (CNH) renminbi exchange rates have weakened since April with the CNH reaching the low level of 6.7 against the US dollar in mid-July. Meanwhile, the discount of the CNH vis-à-vis its onshore counterpart remained contained at moderate levels, while CNH HIBORs remained broadly stable, despite occasional pick-ups.

With market expectation of continued weakness in the renminbi exchange rate, Hong Kong's renminbi liquidity pool (including outstanding renminbi customer deposits and certificates of deposits) consolidated further in the first half of 2016, while renminbi trade settlement and bank lending also declined over the same period. That said, Hong Kong's position as a global hub for offshore renminbi clearing and settlement remained robust, with the average daily turnover of renminbi real time gross settlement system staying at a high level. Despite the recent slowdown in offshore renminbi activities, the ongoing capital account liberalisation in Mainland China and the implementation of the Belt and Road Strategy are expected to support the development of offshore renminbi business in Hong Kong going forward.

Asset markets

Hong Kong equities have rebounded after reaching a four-year low in February. Against the backdrop of strong rallies in major markets and recovery of oil prices, fears of a possible severe slowdown in the global economy have subsided. The UK referendum to leave the EU caused some anxiety at one stage, triggering a pullback by international investors, but it was short-lived. Subsequently, increased expectations of a more gradual pace of monetary normalisation in the US and further easing of monetary policy in other major economies have lent support to global equities, including those of Hong Kong. Nonetheless, the outlook for local equities remains highly uncertain in light of the weakened outlook for the global economy, except the US.

Meanwhile, the domestic debt market has expanded markedly, on the back of a strong pickup in issuance by both domestic and international borrowers. The public sector, private sector and overseas institutions, especially the multilateral development banks (MDBs), all tapped the market aggressively in the first half of this year, compared to the same period a year ago. As a consequence, the total amount of local currency debt outstanding rose sharply. This is in sharp contrast with the offshore renminbi market, which saw issuance fall further in the review period. The decline was attributable to a combination of factors, including reduced financing needs of the slowing Mainland economy, further weakness of the renminbi and lower borrowing costs onshore. While the trend is unlikely to reverse any time soon, the longer-term outlook is still optimistic in view of rising long-term demand for renminbi assets.

The residential property market has stabilised since the second quarter. With property developers increasing new launches and providing aggressive promotional schemes to lure buyers, including the offering of very high loan-to-value mortgage plans, primary market transactions picked up, while secondary-market transactions also increased. With increase in the transaction volume, housing prices also picked up, with the Centa-City leading index rising since March. The outlook for the property market has become more uncertain. On the one hand, the uncertainty surrounding the pace and effect of US rate hike will continue to pose headwinds. New launches in the pipeline and the uncertain global economic environment will also put downward pressure on housing prices. On the other hand, market expectation of still-abundant global liquidity would provide some support in the near term.

Banking sector performance

The profitability of retail banks improved in the first half of 2016, mainly attributable to lower operating costs. Their pre-tax operating profit increased by 14.9% in the first half of 2016 as compared with the second half of 2015, contributing a rebound of the return on assets to 1.07% from 0.95%.

The banking sector maintained strong fundamentals. Banks' capital and liquidity positions, as measured by Basel III standards, were structurally robust. The consolidated capital adequacy ratio of locally incorporated authorized institutions (AIs) rose to 19.4% at the end of June 2016. The average Liquidity Coverage Ratio for category 1 institutions rose further to 158.0% in the second quarter, while the average Liquidity Maintenance Ratio for category 2 institutions stood at 53.8%. All these ratios were well above their regulatory minimums. Asset quality remained sound by historical standards despite slight deterioration during the review period. To enhance banks' resilience against systemic risks, the countercyclical capital buffer will rise to 1.25% of total risk-weighted assets with effect from 1 January 2017 from the current 0.625%.

Box 4 (see page 66) provides a comprehensive assessment of corporate leverage in Hong Kong based on different indicators. Overall, the assessment shows that non-local corporates in Hong Kong play a bigger role in driving up the aggregate corporate leverage in Hong Kong after the global financial crisis. If the global economic environment deteriorates further and/or the US interest rate rise resumes, the debt-servicing ability of some non-local corporates will be under significant pressure. Banks should manage credit risk in relation to their corporate exposure more prudently.

Looking ahead, the banking sector will face multiple headwinds. The subdued demand for credit, depressed yields of safe assets and keen competition in the mortgage market could pose challenges for banks in managing their surplus funding, putting pressure on their profitability. Although the Hong Kong banking system has not been much affected by the Brexit vote, continued monitoring of potential international spillover risks is required in view of the unmatched role of the UK banking system in channelling international banking flows and the significant interbank linkage between Hong Kong and the UK.

The *Half-yearly Report on Monetary and Financial Stability* is prepared by the staff of the Research Department of the Hong Kong Monetary Authority.

2. Global setting and outlook

Global financial markets recovered shortly after the Brexit-related sell-offs on expectations of further policy support. In response to heightened uncertainties and market volatilities from Brexit, major central banks have maintained, if not further loosened, their accommodative monetary policy. Nevertheless, concerns over major central banks running out of policy ammunitions are increasing, and some governments in advanced economies may find it tempting but politically difficult to implement further fiscal stimulus. The increasing divergence between the liquidity-driven stability in the financial markets and longer-term fundamentals, particularly given the growing unusual economic and political uncertainties, could risk sowing the seeds for future financial volatility and disruptions.

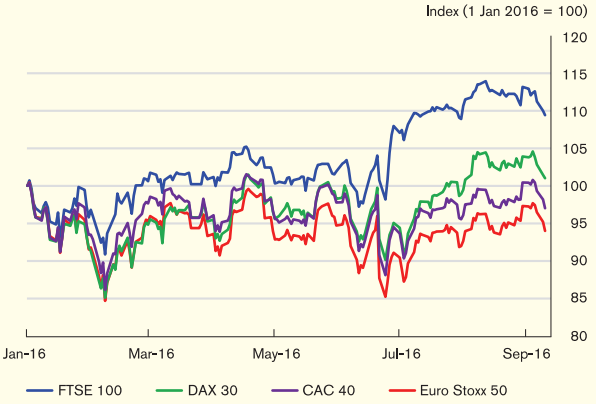
In East Asia, financial markets stabilised after a brief surge of volatility following the Brexit decision. Many regional central banks have eased their monetary policy recently to support growth. Although the region may see more capital inflows in the near term due to the search-for-yield behaviour of investors, the full impacts of Brexit, especially those on real activities through trade and direct investment channels with the European Union, remain to be seen.

In Mainland China, growth continued to trend down in the first half of 2016 but the momentum showed signs of stabilisation in the second quarter thanks to accelerated infrastructure and property investment, as well as narrowed declines in net exports. The slowdown in economic growth and weakening corporate earnings continued to weigh on asset quality of Mainland banks. However, the provisions put aside and banks' solid pre-tax profits should be sufficient to cover potential loan losses. The renminbi exchange rate weakened during the review period but currency volatility subsided on improved market sentiment, which also helped ease outflow pressures.

2.1 External environment

Global financial markets tumbled in late June as the United Kingdom (UK) voted to leave the European Union (EU) in the referendum (Brexit). Nevertheless, the sell-offs were orderly and later proved to be short-lived, cushioned by expectations of further policy support from major central banks (Chart 2.1).

Chart 2.1
Recent re-pricing in the equity markets

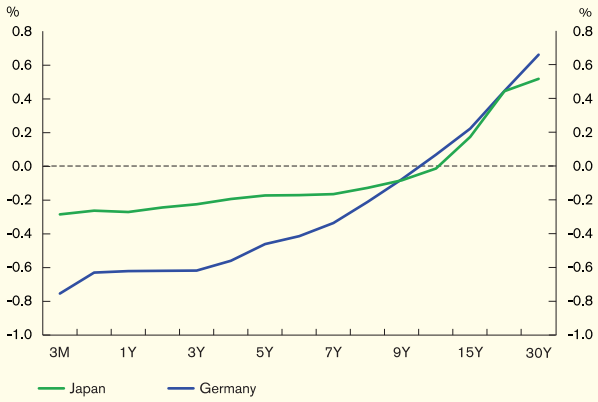


Source: Datastream.

While Brexit has so far caused limited disruptions on the global financial markets, its full impact will take years to show and will depend critically on several factors, such as the outcome of the UK-EU negotiation, and whether risks of a wider political fallout, such as the threat of a European disintegration and the rise of protectionism, can be contained. In the near term, the direct impact of Brexit on the global economy should not be large, given the limited direct real linkages of the UK to the global economy. However, the European economy may still be susceptible given its fragility and the already difficult operating conditions facing European banks. If Europe is significantly affected, there may be second-round effects on emerging market economies (EMEs) given their dependence on export demand and investment from Europe.

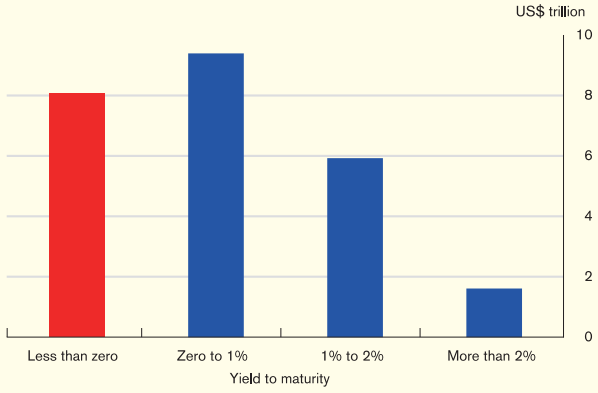
In the face of heightened uncertainties and market volatilities from Brexit, major central banks have maintained and, in some cases, further loosened their ultra-accommodative monetary policies. Nevertheless, room for further monetary easing and their effectiveness has diminished. For asset purchases, the European Central Bank (ECB) and the Bank of Japan (BoJ) already hold a sizeable amount of total sovereign bonds outstanding and are currently purchasing sovereign assets at a rapid pace. As such, they could, at some point, encounter limitations on the pool of eligible assets with their purchase programmes. For negative interest rate policy, central banks in Europe and Japan have already cut their policy rates to negatives. This has further exacerbated the search-for-yield behaviour in an already low growth, low inflation, abundant liquidity and high uncertainty environment, causing an even greater distortion to the global financial markets. A large part of the sovereign yield curves in Europe and Japan have sunk below zero (Chart 2.2). Partly as a result, there is now an estimated total of US$8.1 trillion of sovereign bonds with negative yields, equivalent to around 32% of the total outstanding across developed markets (Chart 2.3). Further cuts in negative interest rates would therefore not only further impinge on bank profitability, but also drive further inflow into assets with higher risk-adjusted returns, such as the US treasuries.

Chart 2.2
Sovereign yield curves in Europe and Japan



Source: Bloomberg.

Chart 2.3
Amount of developed market sovereign bonds by yield-to-maturity

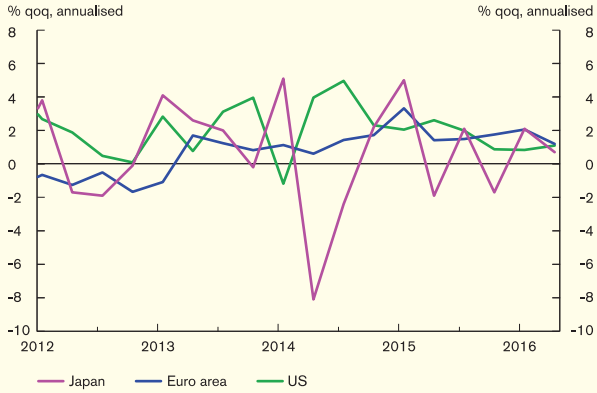


Source: Bloomberg.

With increasing concerns that central banks will run out of policy ammunition, the Japanese government has announced a new ¥28.1 trillion (5.5% of Gross Domestic Product (GDP)) fiscal stimulus. Nevertheless, its near-term boosting effects are likely to be much smaller than the headline figures suggest, as new direct spending only makes up ¥7.5 trillion (1.4% of GDP). The rest of the stimulus package comprises fiscal loans and private sector spending to which their take-ups remain uncertain and the actual outlays could spread over a number of years. In fact, the Japanese government has forecast the stimulus package will only boost Japan's real GDP by 1.3%. Meanwhile, governments in other advanced economies may also find it tempting but politically difficult to implement further fiscal stimulus.

The US Federal Reserve (Fed) is now generally expected by markets to gradually normalise its monetary policy. Nevertheless, the brighter economic prospects and faster build-up of underlying price pressures in the US relative to that of Europe and Japan mean global monetary policy divergence could yet intensify further down the road. In the US, although real GDP grew by a disappointing 1.1% quarter on quarter (annualised) in the second quarter, after growing by a modest 0.8% in the previous quarter (Chart 2.4), the weakness was mainly due to inventories drawdown, which has been a significant drag for the past five quarters. Excluding inventories, final sales of domestic product has expanded by a solid 1.9% over the past year. Otherwise, the underlying strength of the US economy, particularly the household sector, remains solid with the unemployment rate falling to 4.9% in August, close to the Fed's estimated natural rate of 4.8%. By contrast, real GDP growth in the euro area nearly halved to 0.3% quarter on quarter (1.2% qoqa) in the second quarter, down from 0.5% (2.1% qoqa) in the previous quarter. The unemployment rate edged down but remained high at 10.1% in July. Similarly, in Japan, real GDP growth was 0.2% in quarterly terms (0.7% qoqa) in the second quarter, down from 0.5% (2.1% qoqa) in the previous quarter. The recovery remains fragile with the sharp appreciation of the yen and fall back in inflation expectations posing strong economic headwinds.

Chart 2.4
Real GDP growth of major advanced economies

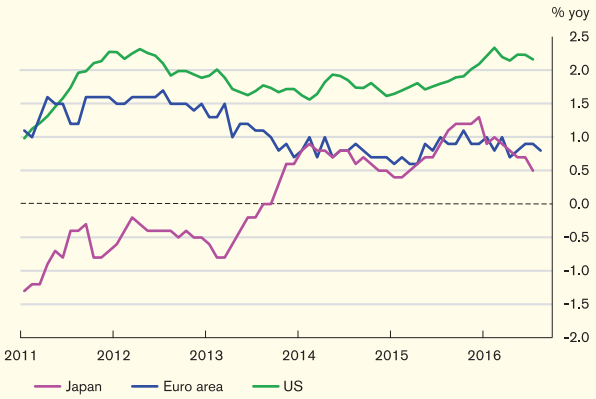


Source: Bloomberg.

As a result of the differences in the strength of recoveries, the underlying inflation continued to diverge across major advanced economies, which could have different implications for monetary policies (Chart 2.5). In the US, core Consumer Price Index (CPI) inflation (excluding food and energy) stayed elevated at 2.2% in July with the core services inflation close to an 8-year high of 3.1% amid the build-up of domestic demand pressures. As the global oil prices and the US dollar stabilise, headline Personal Consumption Expenditure inflation is expected to return to the Fed's 2% target in the medium term. As such, the Fed is still expected to hike rates, albeit gradually. By contrast, core inflation in the euro area edged lower to 0.8% in August amid the modest recovery with market-based measures of longer-term inflation expectations hovering around 1.3%, close to its historically low level. Similarly, in Japan, inflation continued to come under pressure from weak growth and the strong appreciation of the yen

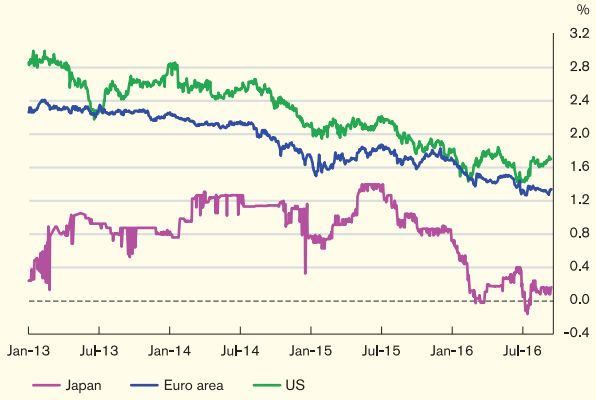
with the "new core" measure (excluding fresh food and energy) falling to a near-one-year low of 0.5% in July and inflation expectations dipping below levels last seen at the launch of Abenomics in early 2013 (Chart 2.6). The weak growth and subdued inflation mean the ECB and BoJ are expected to maintain, if not further loosen, their ultra-accommodative monetary policies.

Chart 2.5
Core CPI inflation in major advanced economies



Note: For Japan, 2010 based figures are used before 2016 while 2015 based figures are used since January 2016.
Sources: CEIC and Datastream.

Chart 2.6
Inflation expectations in major advanced economies



Note: Data used for the US is the 5-year/5-year forward inflation expectation rate. Data used for the euro area is the inflation-linked swap rate at 5-year forward 5-year ahead. Data used for Japan is the 5-year/5-year inflation swap rate.
Sources: Bloomberg, Datastream and St Louis Fed.

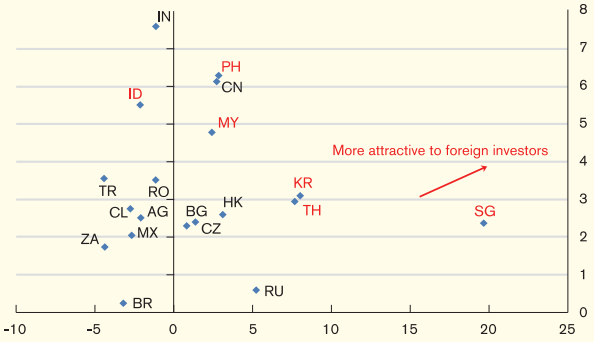
Looking ahead, despite expectations of a slower pace for the Fed's monetary policy normalisation, increased demand for US treasuries (amid negative sovereign bond yields and record-low interest rates in Europe and Japan) and growth divergence between the US and economies in Europe and Japan could provide support to a strong US dollar. In such case, renewed downward pressure on oil prices and depreciation pressure on emerging market currencies, especially those with weaker economic fundamentals, cannot be ruled out. The risk is that the increasing divergence between the liquidity-driven stability in the financial markets and longer-term fundamentals, particularly given the growing unusual economic and political uncertainties, could risk sowing the seeds for future financial volatility and disruptions. Financial disruptions, whether in advanced or emerging market economies, could spill over quickly to one another given their increasing interconnectedness. Box 1 analyses the bilateral spillovers between the two in the sovereign bond markets. Our finding suggests that, while shocks originating from the US have a sizeable effect on the EMEs, the spillovers going the other way from EMEs to the US have also increased notably after the "taper tantrum" in mid-2013.

In East Asia[1], financial markets have stabilised after a brief surge of volatility following the UK's vote to leave the EU. Most regional currencies staged a rebound a few days afterward as sentiment stabilised. In the face of the limited immediate impacts of Brexit on financial stability of the region, and an ample global liquidity from the continuation of the accommodative monetary policy stance of major central banks, many regional economies have seen large

[1] East Asian economies refer to Indonesia, Malaysia, the Philippines, Singapore, South Korea, Taiwan and Thailand.

portfolio inflows in July and August. Such inflows, which are likely to be driven by investors' renewal of their search for yield, are, in general, more significant in East Asian economies than other EMEs given the former's better growth prospect and stronger external position (Chart 2.7).

Chart 2.7
EMEs: Current account balance and expected economic growth (As of Q1 2016 or Q4 2015)



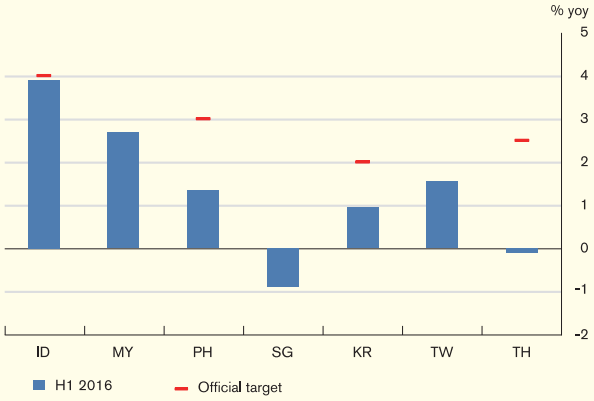
Y-axis: Expected growth in 2016-2020 (% yoy)
X-axis: Current account balance (% of GDP)

Sources: IMF WEO and Oxford Economics.

Nevertheless, the scale of potential capital inflows might not be as large as what we saw in the aftermath of the global financial crisis, for several reasons. First, further monetary easing in advanced economies might see limited room now as any further push down of interest rate may result in side effects (such as the squeezing of banks' profit margins or risks of disintermediation as savings rates are pushed lower). Second, with much richer valuation, assets of many East Asian economies have now become less attractive to foreign investors. Third, while regional economies are expected to continue to outperform advanced economies, most of them have already shown signs of slowing down in recent years, reducing the attractiveness of the region to portfolio inflows.

Indeed, growth momentum of most regional economies continued to be constrained by sluggish external and domestic demand in the first half of 2016. In particular, commodity exporters in the region (e.g. Indonesia and Malaysia) continued to struggle with low commodity prices and sluggish global demand, while manufacturers in Singapore and South Korea also faced challenges from weak demand for their industrial products, such as components of personal computers and cars. Meanwhile, on the back of weak real activities, inflationary pressures were absent in the region with many regional economies having headline CPI inflation lower than their targets in recent months (Chart 2.8).

Chart 2.8
Asia: Headline CPI inflation

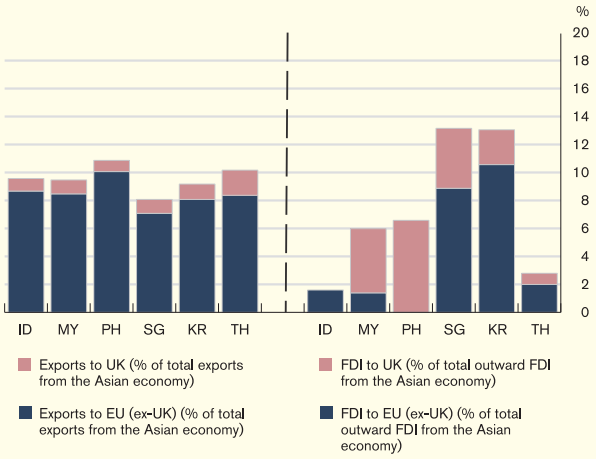


Note: Red bars show the median of inflation target predetermined by regional central banks that adopt inflation targeting framework.
Sources: CEIC and national sources.

Against the backdrops of weak growth and low inflation, together with the slower-than-expected interest rate hike in the US, many regional central banks have eased their monetary policy to support growth. For example, central banks of Indonesia, Malaysia, South Korea and Taiwan have lowered their policy interest rates in the first half of 2016, while the Monetary Authority of Singapore also eased its monetary policy in April by flattening the slope of the Singapore dollar nominal effective exchange rate policy band. The shift in the central banks' policy stance might reflect that concerns over growth have conceivably heightened. Meanwhile, with many regional economies witnessing portfolio inflows more recently, it might provide more breathing space for regional central banks to adopt a more accommodative monetary policy stance to support growth.

Looking ahead, while the region is expected to grow at about 3.6% in 2016[2], this is likely subject to increased uncertainties in the external environment. While the immediate effects of Brexit on the region are mild, the likely repercussions of Brexit on East Asia could be larger over a longer time horizon if Europe is also significantly affected. Slower economic growth in Europe and a sharp depreciation of the euro may dampen the demand for Asian exports. Economies such as the Philippines and Thailand are relatively more vulnerable, given that the EU accounts for a significant share of their merchandise exports (Chart 2.9). Moreover, a significant slowdown of the EU economy may result in firms from Europe reducing, or even pulling back, their outward foreign direct investments (FDI) to the rest of world, including East Asia. Meanwhile, other factors, such as the pace of US interest rate normalisation, US dollar strength and Mainland's economic slowdown, will continue to play a major role in shaping the economic prospect of the East Asian region.

Chart 2.9
Asia: Trade and financial linkages with UK and EU (As of 2014)



Sources: CEIC, IMF and HKMA staff calculations.

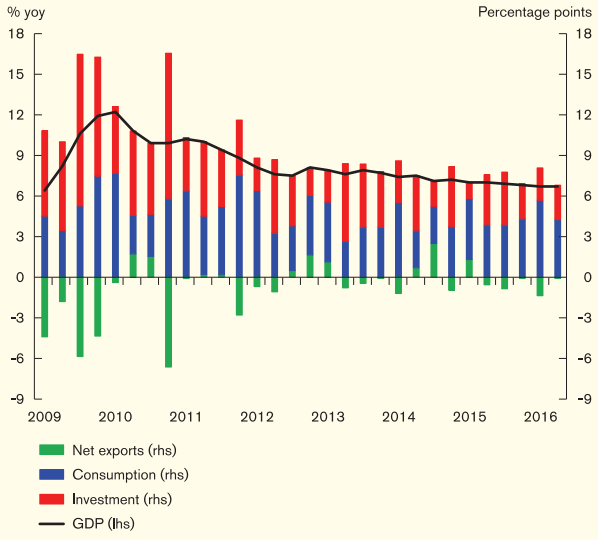
[2] Weighted average of growth forecasts for the seven East Asian economies. Consensus Forecasts, July 2016.

2.2 Mainland China

Real sector

Growth in Mainland China continued to trend down in the first half of the year, with real GDP growing by 6.7% year on year, compared with 6.9% last year (Chart 2.10). Among major components, consumption continued to hold up well and remained the most important driver of economic growth. Partly reflecting improved ordinary exports and weaker import growth, narrowed declines in net exports helped stabilise economic growth in the second quarter. On the other hand, the support of investment to growth declined, as accelerated public spending on infrastructure projects and increases in property developments were not enough to offset weak private business spending.

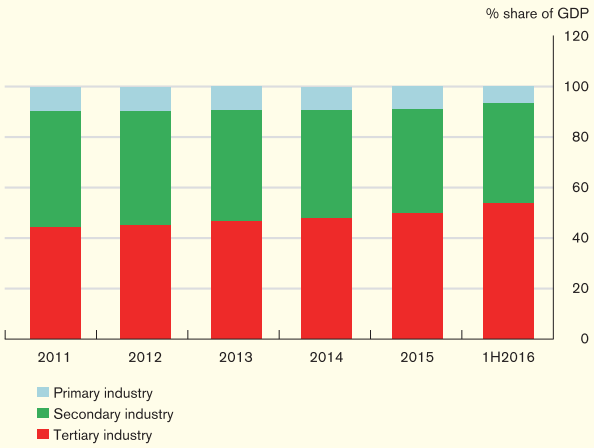
Chart 2.10
Mainland China: contribution to GDP growth by demand component



Sources: CEIC, NBS and HKMA staff estimates.

In value added terms, tertiary industry continued to expand at a faster pace than other sectors, with its share of GDP rising to 54% in the first half of this year from 52% in a year ago (Chart 2.11). Among major sectors in the tertiary industry, value added of the real estate sector saw the fastest growth during the review period amid the recent run-up in home prices, followed by accommodation and catering, and wholesale and retail trade. Growth of secondary industry, after having eased in the first quarter, also improved in the second quarter this year, in part underpinned by increased demand in property related industries such as construction, chemical and non-metal mineral amid the recent real estate boom.

Chart 2.11
Mainland China: share of GDP by industry



Sources: NBS and HKMA staff estimates.

Looking ahead, uncertainty over near-term growth prospects remains in view of the rapidly changing domestic and external environment. On the domestic front, the ongoing supply-side reforms focusing on deleveraging and de-capacity would likely continue to weigh on near-term growth prospects. Meanwhile, the recovery in external demand is uncertain, depending on the pace of recovery in major economies. Latest forecasts by market analysts project real GDP growth to moderate to 6.6% for 2016.

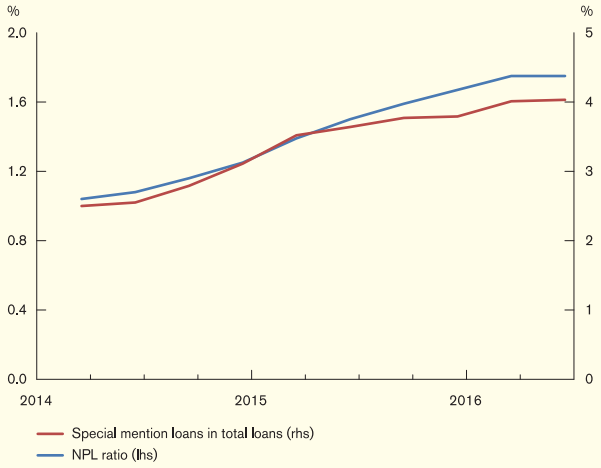
Consumer price inflation remained moderate at 2.2% in the first half of 2016 on weak domestic demand, albeit picking up from 1.5% year on year in the fourth quarter of 2015, partly as a result of the fast increase in food price inflation. The core inflation, which is the headline CPI excluding food and energy, remained benign at 1.6% year on year in June despite having shown a slow rising trend since early this year. As for upstream prices, the decline in producer prices

narrowed notably from -4.9% year on year in the first quarter to -3.0% in the second quarter, in part underpinned by the rebound in commodity prices since March.

Bank lending and asset quality

Asset quality of Mainland banks remained under pressure given the slowdown in economic growth and weak corporate earnings. Reflecting this, non-performing loans (NPLs) picked up from RMB1.39 trillion in the first quarter to RMB1.44 trillion in the second quarter. While the NPL ratio remained stable at 1.75%, the share of special mention loans in total loans edged up from 4.01% to 4.03% over the same period (Chart 2.12).

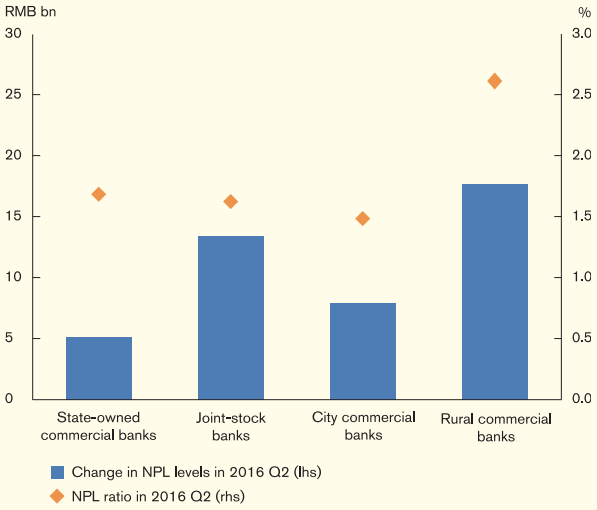
Chart 2.12
Mainland China: NPL ratio and share of special mention loans in total loans



Source: CBRC.

Smaller banks seemed to be more vulnerable to deterioration in credit quality given their larger exposure to small firms and thinner capital buffers. Latest performance indicators show that the level of NPLs increased noticeably in joint-stock, city and rural commercial banks in the second quarter (Chart 2.13), resulting in a decline in the bad debt coverage ratio (i.e., provisions/NPLs) among these banks. Relative to total loans, the NPL ratio came down in state-owned commercial banks, but continued to pick up in smaller banks.

Chart 2.13
Mainland China: NPL ratios of different types of commercial banks



Source: CBRC.

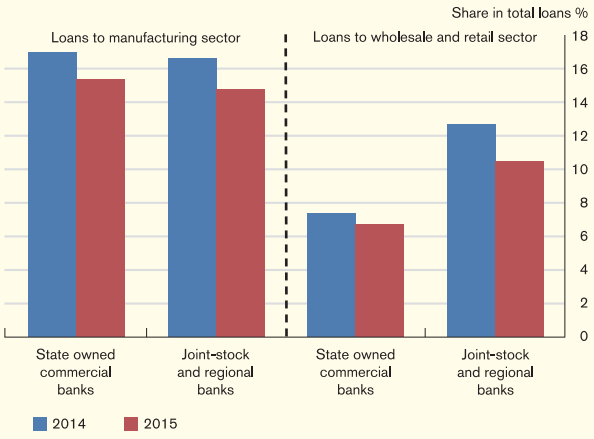
To clean up distressed assets, banks have speeded up the disposal of NPLs through write-offs or transfers to asset management companies. Latest estimates show that Mainland banks still have sufficient buffers to absorb potential loan losses given their strong provisions and solid pre-tax profits. For example, provisions set aside by Mainland banks stood at US$380 billion in the second quarter. This, combined with pre-tax profits of some US$400 billion in 2015, should be sufficient to cover potential loan losses suggested by market estimates, including the IMF estimate of US$760 billion under the stress-case scenario.[3]

With deterioration in asset quality, banks became more prudent in their lending business and contained their exposure to segments with high NPL ratios such as manufacturing and wholesale/retail trade sectors (Chart 2.14). Meanwhile, the less favourable business environment also weighed on loan demand, particularly for private-sector borrowers. Reflecting this, credit growth weakened in the first half from a year earlier. Breakdown by sector shows that loan

[3] The IMF Global Financial Stability Report, April 2016.

growth continued to ease in the industrial sector as sluggish external demand weighed on the borrowing needs of manufacturers, while growth in mortgage loans picked up, underpinned by the revival of property sales (Chart 2.15).

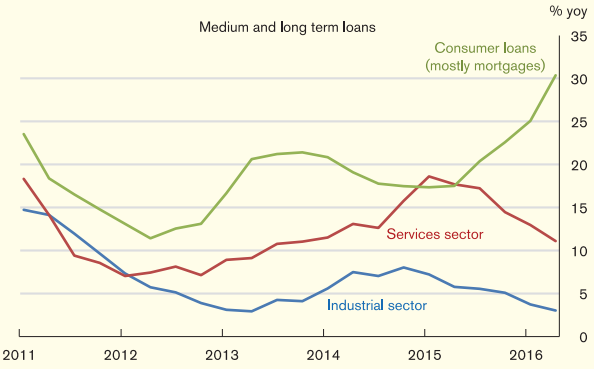
Chart 2.14
Mainland China: Loans to the manufacturing and wholesale / retail trade sectors



Note: The data on loans to the manufacturing sector are collected from 16 listed banks. The data on loans to the wholesale and retail sector are collected from 13 listed banks due to data limitations.

Sources: WIND and HKMA staff estimates.

Chart 2.15
Mainland China: Growth of medium and long term loans by sector

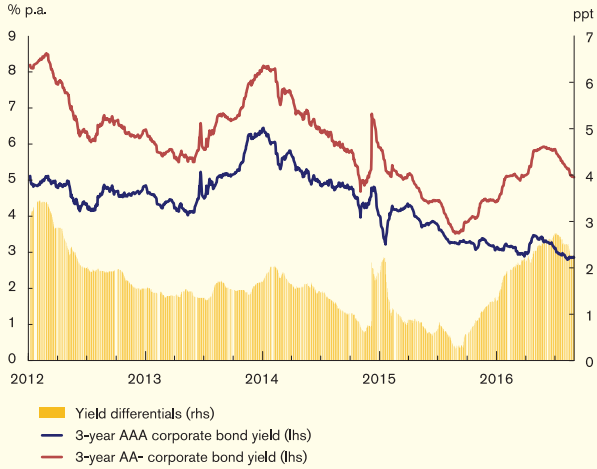


Sources: WIND and HKMA staff estimates.

Asset markets

Mainland China has witnessed a rotation of investment binge in asset markets amid loose monetary conditions since 2015. In particular, after the boom in the equity market in the first half of 2015 and the bust in the following quarter, the upbeat sentiment seemed to have switched to the bond market, resulting in a quick fall in corporate bond yields. Buoyant bond market conditions however did not last long amid an increased number of issuer defaults.[4] Corporate bond yields, especially the yields of issuers with weaker financial conditions, started to pick up quickly after the last quarter of 2015. In particular, the yield of 3-year AA- corporate bond surged by 160 basis points from the trough in 2015 to reach 5.1% at the end of August, 2016. Yield spreads between low-rated and high-rated corporate bonds widened to 270 basis points in July, the highest in four years (Chart 2.16). While more reasonable pricing of default risk helped reduce moral hazard and instil discipline in issuance activities, increased borrowing costs weighed on issuance activities, with the net increase in bond financing shrinking by nearly two-thirds in the second quarter from the previous quarter.

Chart 2.16
Mainland China: Yield differentials between low-rated and high-rated corporate bonds

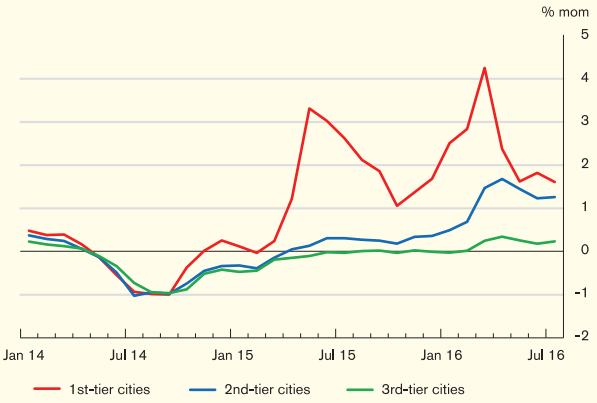


Sources: WIND and HKMA staff estimates.

[4] In 2015 there were 19 bond defaults. This number increased to 36 in the first half of 2016 involving 18 issuers, of which 6 were state-owned enterprises.

While late 2015 and early 2016 saw continued corrections in the equity and the corporate bond markets[5], the real estate market boom accelerated, with the average quarter-on-quarter house price growth rate in the 70 cities monitored by the National Bureau of Statistics (NBS) increasing to 1.5% and 2.1% respectively in the first and second quarters of 2016 from 0.5% in the last quarter of 2015. Following the market boom in first-tier cities, property price growth in second-tier cities started to accelerate in early 2016. Some second-tier cities, including Nanjing, Suzhou, Hangzhou and Xiamen, even reported their land prices to have reached a record high recently. Meanwhile, property markets in third-tier cities also revived, with price growth turning to positive in March and continuing to pick up in the second quarter (Chart 2.17).

Chart 2.17
Mainland China: house prices

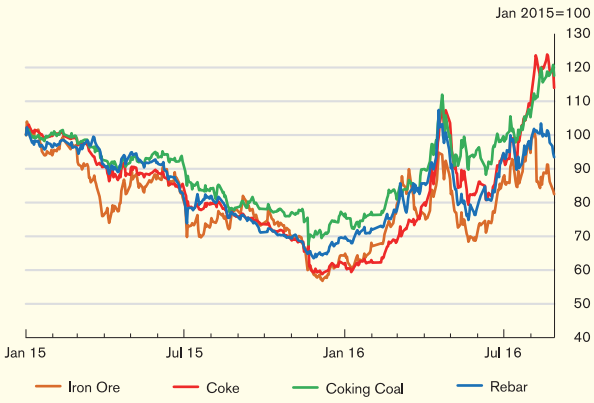


Sources: CEIC and HKMA staff estimates.

While buoyant property market conditions helped stabilise economic growth, risks may arise should the recent boom not turn out to be sustainable, given the strong linkages between the property market and the rest of the Mainland economy and the financial system. In response, the government has introduced measures to contain the fast rising property prices in some first-tier cities, including tightening the restrictions on home purchases by people without a residence permit and prohibition of the use of unregulated down payment loans by home buyers through P2P (peer-to-peer) platforms. Meanwhile, authorities have also stepped up supportive measures to tackle property stock overhang problems in third-tier cities, such as subsidising home purchases and lowering the down-payment ratios for mortgage borrowers.

Following the real estate boom, prices of major commodity futures traded in the Shanghai Futures Exchange and the Dalian Commodity Exchange also increased markedly through January–April (Chart 2.18). While the run-up in prices could be in part underpinned by improved demand from accelerated real estate and infrastructure spending, it might have also involved speculative elements amid loose domestic monetary conditions. In view of this, the two exchanges introduced a batch of tightening measures to curb speculative activities in May, such as higher transaction levies, stricter margin requirements and shorter trading hours. The market remained volatile following the introduction of the tightening measures, with commodity prices dropping drastically in May but soon rebounding in June.

Chart 2.18
Mainland China: commodity prices



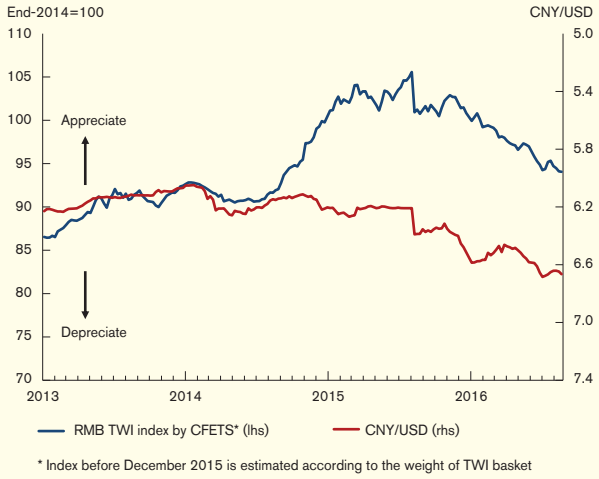
Sources: WIND and HKMA staff estimates.

[5] The Mainland equity market was largely stable in the first half of 2016 after the correction in early January. In tandem, leveraged trading activities also subsided, with the outstanding size of margin financing on the Shanghai and the Shenzhen stock exchanges coming down from RMB1,174 billion at the end of 2015 to less than RMB900 billion in July 2016.

Exchange rate and money market

Following the refinements to the fixing mechanism of the central parity rate in August and December last year, the renminbi exchange rate has become more flexible. After gaining 0.4% against the US dollar in the first quarter, the renminbi weakened by 2.6% in the second quarter as the US dollar strengthened on safe-haven demand following the Brexit decision (Chart 2.19). Reflecting this, together with the appreciation of Japanese yen, the renminbi exchange rate index weakened against the currency baskets of China Foreign Exchange Trade System, Bank for International Settlements and Special Drawing Rights by 3.2%, 3.0% and 1.9% respectively in the second quarter.

Chart 2.19
Mainland China: Renminbi trade weighted exchange rate index and CNY exchange rate

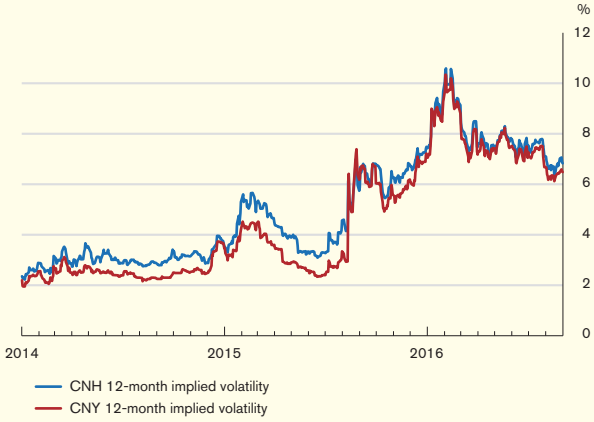


* Index before December 2015 is estimated according to the weight of TWI basket

Sources: CEIC and HKMA staff estimates.

Market sentiment appeared to have improved in the second quarter compared with the first quarter, as suggested by the notable decline in the renminbi exchange rate volatility (Chart 2.20). In addition, while volatility increased in the global foreign exchange market following the Brexit decision, there was little sign of a significant increase in the volatility of renminbi exchange rates in the onshore (CNY) and offshore (CNH) markets towards the end of June.

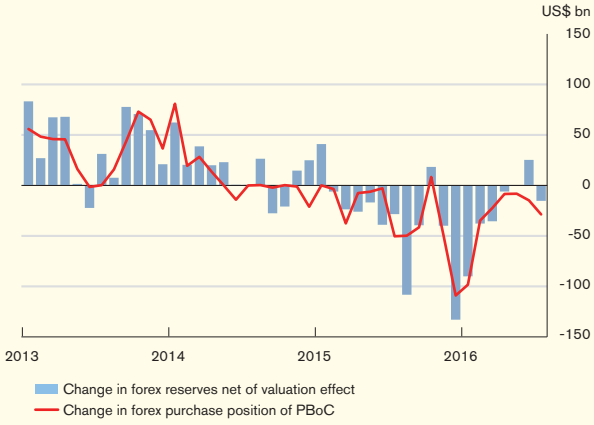
Chart 2.20
Mainland China: Option implied volatility of the CNY and CNH exchange rates



Sources: Bloomberg and HKMA staff estimates.

Reflecting improved market sentiment, capital outflow pressures eased in the second quarter, with foreign reserves stabilising at around US$3.2 trillion and the decline in the foreign exchange purchase position of the People's Bank of China (PBoC) narrowing towards the mid-year (Chart 2.21). The net sales of foreign exchange by banks to customers also shrank from US$138 billion in the first quarter to US$51 billion in the second quarter, suggesting that incentives for residents to hold more foreign currencies started to diminish.

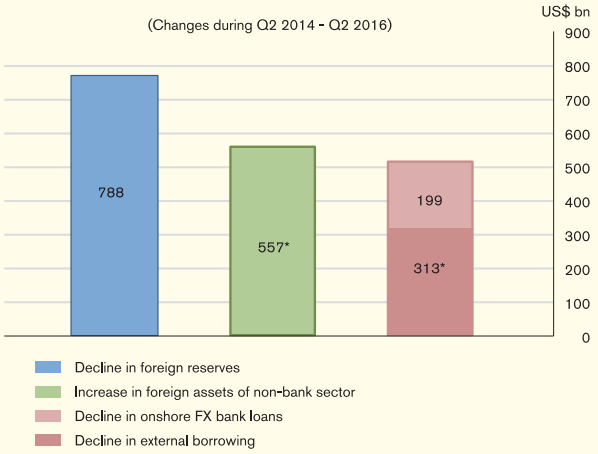
Chart 2.21
Mainland China: Changes in PBoC's foreign exchange purchase position and foreign reserves



Sources: CEIC, SAFE and HKMA staff estimates.

Following the depreciation of the renminbi, Mainland firms cut back their external borrowing by US$313 billion between the second quarter of 2014 and the first quarter of 2016. Meanwhile, external assets held by the non-bank sector increased by US$557 billion. The asset-liability rebalancing by the private sector helps explain most of the decline in foreign reserves from the second quarter of 2014 through the second quarter of 2016 (Chart 2.22). During the same period, non-bank corporates also paid down their foreign currency borrowing in the onshore market by almost US$200 billion to reduce the risk of currency mismatch.

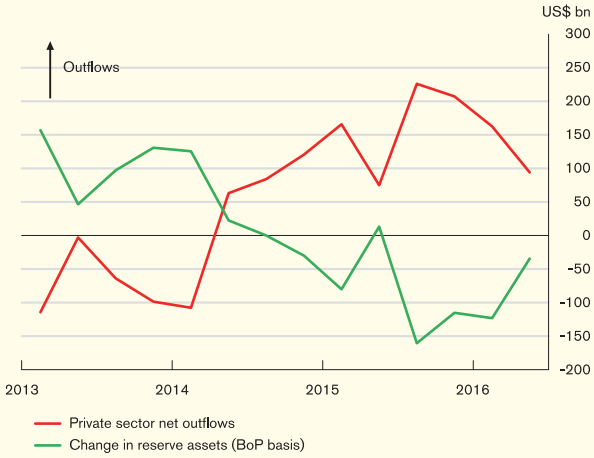
Chart 2.22
Mainland China: Factors contributing to change in foreign reserves



* Changes up to Q1 2016 due to data availability.
Sources: PBoC, SAFE and HKMA staff estimates.

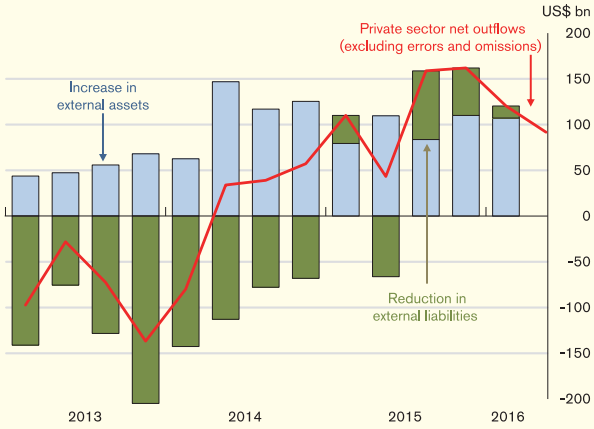
Given that external borrowing shrank by nearly half from the peak in 2014, the room for a sharp reduction in external debt would become smaller. Balance of payments (BoP) statistics show that net capital outflows by the private sector moderated to some US$90 billion in the second quarter from the peak of US$230 billion in the third quarter last year (Chart 2.23). After excluding errors and omissions, the moderation of net capital outflows by the private sector was mainly driven by a slower pace of reduction in external liabilities by Mainland residents, while the increase in external assets remained largely steady (Chart 2.24).

Chart 2.23
Mainland China: Change in official reserves and private sector cross-border fund flows



Sources: CEIC and HKMA staff estimates.

Chart 2.24
Mainland China: Decomposition of net capital flows by private sector

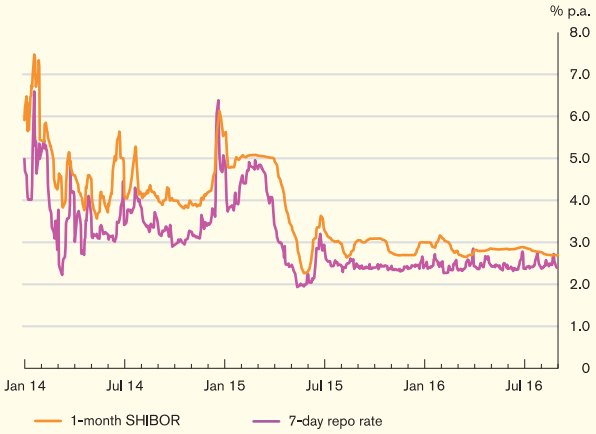


Sources: CEIC and HKMA staff estimates.

With the sizable pay down of external debt and foreign currency loans by the non-bank sector, the exchange rate risk faced by Mainland enterprises would become smaller, rendering business owners less vulnerable to fluctuations in the renminbi exchange rate. Using listed company data, Box 2 shows that on average the exposure of Mainland enterprises to renminbi depreciation is not high given limited US dollar borrowing by Mainland firms, despite the fact that some tradable goods and service sectors are found to be more vulnerable than others.

Liquidity conditions in the money market remained largely stable during the review period. Short-term interest rates such as 7-day repo rate and 1-month Shanghai Interbank Offered Rate (SHIBOR) mostly traded at around 2.5% and 2.8% respectively in the first half of this year (Chart 2.25). To smooth out short-term fluctuations in interbank interest rates, starting from February the PBoC decided to conduct open market operations daily instead of twice a week, depending on liquidity conditions in the banking system. Stable and low interbank interest rates help contain the funding costs of smaller banks which rely on interbank borrowing and are major lenders to small business owners.

Chart 2.25
Mainland China: 7-day repo rate and 1-month SHIBOR



Sources: CEIC and HKMA staff estimates.

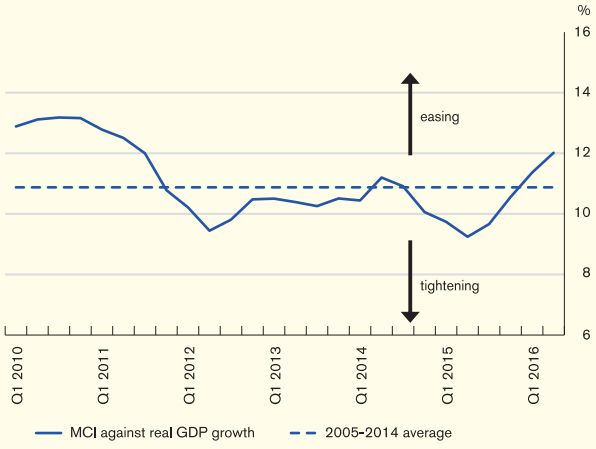
Fiscal and monetary policy

The government continued to strike a balance between restructuring and stabilising growth. In particular, while a proactive fiscal policy stance was maintained in order to shore up infrastructure spending, monetary policy stance remained prudent in view of the financial risks relating to the already high level of corporate leverage.

During the review period, the PBoC kept the benchmark interest rates and required reserve ratio unchanged while relying more on targeted measures to support bank lending to strategically important sectors such as agriculture and small and micro-sized enterprises, and to accommodate public spending. In particular, the central bank has enhanced its support to the three policy banks in their infrastructure lending, for instance to shanty upgrading and water conservancy projects, through more frequent use of Pledged Supplementary Lending (PSL) since May. Reflecting the greater reliance of the central bank on targeted measures, the year-on-year growth of the outstanding size of Medium-term Lending Facility (MLF) increased to 348% in July 2016 from 3.3% at the end of 2015, and the average monthly increase in the outstanding size of PSL also accelerated from RMB77.5 billion in January–April to RMB140.2 billion in May–July.

Although the central bank did not conduct across-the-board easing, lower real interest rates amid rising inflation, together with weaker renminbi effective exchange rate, appeared to have created more favourable monetary conditions for borrowers during the review period. Our in-house estimate of the monetary condition index rose to the highest loosening level in the second quarter since mid-2011 (Chart 2.26).

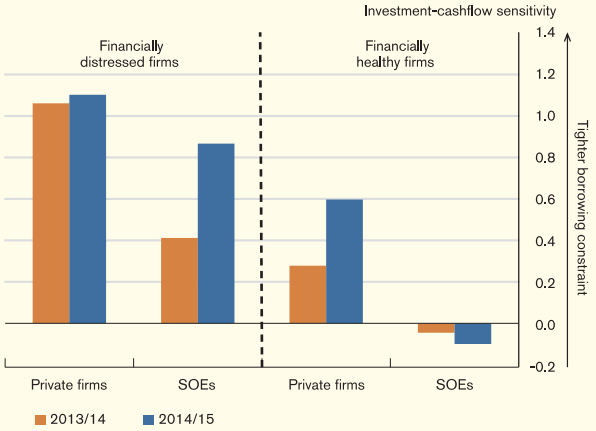
Chart 2.26
Mainland China: Monetary condition index



Sources: CEIC and HKMA staff estimates.

However, the easing monetary conditions did not appear to have translated into greater business expansion. While this might have in part reflected the weak investment appetite of private firms amid the uncertain economic outlook, banks' lending attitude in view of worsening loan book quality might have also played a role. Our analysis on the investment-cash flow sensitivity of listed firms suggests that, in general, private firms still faced greater borrowing constraints than state-owned enterprises (SOEs) in recent years, despite the fact that SOEs with weak financial conditions were facing hardened budget constraints over time (Chart 2.27).

Chart 2.27
Mainland China: Investment-cash flow sensitivity of listed firms



Sources: Bloomberg, WIND and HKMA staff estimates.

On the fiscal front, the government adopted a multi-pronged approach to support the economy, with government expenditure expanding robustly by 15% year on year in the second quarter. To facilitate supply-side reforms such as resolving the overcapacity problems, the government allocated RMB100 billion to subsidise local governments and SOEs in eliminating overcapacity in the steel and coal industries. On the revenue side, to boost private investment, the authorities had fully implemented the value-added tax reform in May, which was expected to reduce the corporate tax burden by more than RMB500 billion this year.

In addition to direct government spending, policy banks also enhanced their lending to infrastructure projects. As a result, the financial bond issuance by policy banks increased by 30% year on year in the first half of 2016.

Despite the accelerated public spending, the risks relating to local government debt would remain contained in the near term. Bank lending to local government financing platforms has been tightened by authorities, and the accelerated local government debt swap program also helps lower the refinancing risks and interest burden facing the local governments. In particular, the issuance of local government bonds rose to RMB3,576 billion in the first half of 2016 from RMB2,967 billion in the second half of 2015, most of which were bonds issued under the debt swap program. That said, the debt-servicing capacity of some local governments appeared to have deteriorated on lowered revenues amid recent economic slowdown and the ongoing supply-side reforms. For instance, while the outstanding public debt of Liaoning province, where many of the steel and coal industry SOEs were facing de-capacity pressures, fell modestly by 0.8% in 2015, the revenue of the Liaoning government declined by 33% in 2015 and then by 9% year on year in the first five months of 2016.

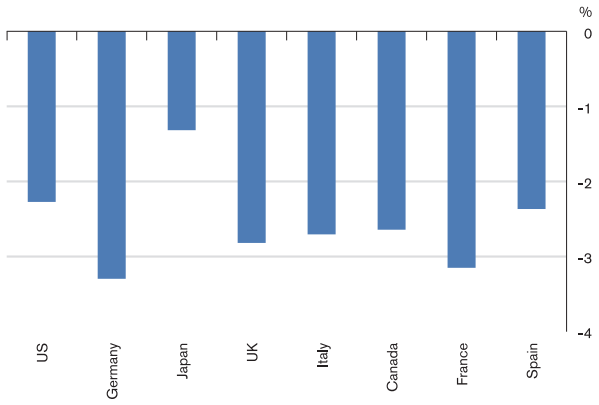
Box 1
Measuring spillovers between the US and Emerging Markets

Introduction

Major advanced economies (AEs) are commonly regarded as a source of financial spillovers to emerging market economies (EMEs). However, the spillovers from EMEs to AEs can be large, given that (i) EMEs have played a major role in global financing flows after years of unconventional monetary policies (UMP) adopted by major AEs; (ii) as EMEs have been net receivers of funds in recent years, some of their corporate leverage has risen to record levels; and (iii) in terms of trade and financial linkages, EMEs have become more integrated into the global economy and financial system over the past decade. Thus, any adverse change in fund flows or in EMEs' economic fundamentals could amplify shock transmission from EMEs to AEs and the rest of the world.

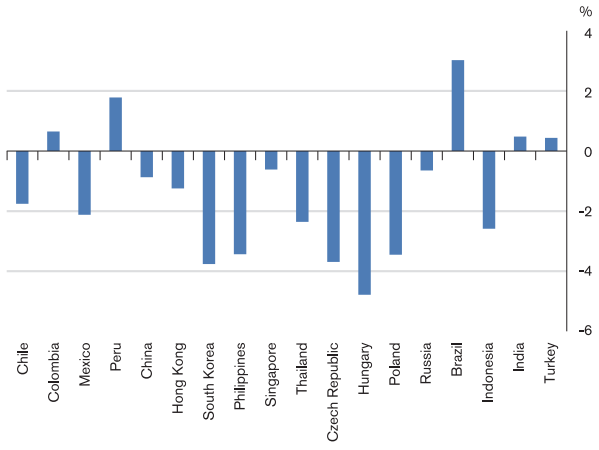
In particular, sovereign bond markets of AEs and EMEs are increasingly interconnected in the post global financial crisis era. Amid uncertain economic outlook, the decline in long-term sovereign bond yields is seen not only in AEs (Chart B1.1) but also in EMEs (Chart B1.2).[6] Against this backdrop, this Box aims to examine the bilateral spillovers between AEs and EMEs in sovereign bond markets.[7]

Chart B1.1
Change in 10-year sovereign bond yields from January 2010 to February 2016 for AEs



Source: Bloomberg.

Chart B1.2
Change in 10-year sovereign bond yields from January 2010 to February 2016 for EMEs



Source: Bloomberg.

[6] Theoretically, the movement of long-term yields can be influenced by short-term policy rates, as well as the investors' expectations of the future economic conditions. Hence, the global yield compression could result from the negative interest rate policies adopted by some major AEs that unintentionally affect EMEs. It could be also due to the weaker-than-expected economic performance in many EMEs recently that drags the economic recovery of AEs.

[7] The IMF recently also conducted a spillover analysis between AEs' and EMEs' sovereign bond, foreign exchange and equity markets using a different sample period and data frequency that differ from us. The IMF finds that while the spillover in sovereign market is significant, the spillovers in foreign exchange and equity markets are more pronounced. For details, see *Global Financial Stability Report* (April 2016) published by the IMF.

Methodology and data

Based on the econometric method proposed by Diebold and Yilmaz (2009),[8] we first provide a broad picture of spillovers among selected economies, and then assess the spillovers between the US and EMEs specifically.[9] The spillover effect is measured by the variance decomposition (VD) derived from a vector autoregressive model. The VD indicates the variation that each variable of the model can be explained by another variable's shock. Thus, a larger VD means a larger variation, and hence, a larger spillover effect from one variable to another.

In our application, the 10-year sovereign bond yields of eight AEs and 18 EMEs are used in estimation (Table B1.A). As of the second quarter of 2015, these sovereign bond markets are worth more than US$40 trillion in total, which covers over 90% of the global sovereign bond markets according to the Bank for International Settlements data.[10] For ease of discussion, we classify all 26 economies into five groups: (i) AEs excluding the US, (ii) the US, (iii) Emerging Europe, (iv) Latin America, and (v) Emerging Asia.

Table B1.A
Eight AEs and 18 EMEs

Group		Economy
Advanced economies (AEs)		US, Japan, UK, Italy, France, Germany, Canada, Spain
Emerging market economies (EMEs)	Emerging Europe	Czech, Hungary, Poland, Russia, Turkey
	Latin America	Brazil, Chile, Colombia, Mexico, Peru
	Emerging Asia	Mainland China, Hong Kong, India, Indonesia, the Philippines, Singapore, South Korea, Thailand

Apart from the selected endogenous variables, three exogenous variables are used to control for the effect of global factors that could affect the financial markets in both AEs and EMEs simultaneously. They include: (i) the Chicago Board Options Exchange Standard & Poor's 500 Implied Volatility Index (VIX) which proxies for the global risk appetite; (ii) the 10-year US Treasury term premium estimated by the Federal Bank of New York which proxies for the effect of UMP adopted by the Fed; and (iii) the US dollar index to control for the effect of the dollar appreciation.

Empirical findings

Broad picture

We provide a broad picture of spillovers across economies by constructing a matrix of VDs. Based on weekly data covering a fixed sample period from March 2007 to February 2016 (or a total of 520 weeks) (Table B1.B), each matrix element is the estimated contribution to the VD of group *i* coming from a shock to group *j*.[11] For instance, a shock originated from Emerging Europe explains 15% of VD of Latin America but only 8% of VD of the US. In other words, the spillover from Emerging Europe has a larger impact on Latin America than the US.

Table B1.B
Spillover matrix among five economy groups*

		From					
	Economy Group	US	AE excluding US	Emerging Europe	Latin America	Emerging Asia	Row Average
To	US	–	34	8	9	10	16
	AE excluding US	35	38	10	4	4	14
	Emerging Europe	12	14	14	12	6	11
	Latin America	13	5	15	17	8	10
	Emerging Asia	19	7	9	10	10	9
	Column Average	21	17	11	10	7	12

Note: * The spillover effect excludes the economy's own effect.
Source: HKMA staff estimates.

8 Diebold and Yilmaz (2009) "Measuring Financial Asset Return and Volatility Spillovers, with Application to Global Equity Market", *Economic Journal*, Vol. 119, pages 158-171.

9 The detailed results in this box are in Fong et al. (2016) "Measuring spillovers between US and emerging markets", HKMA Working Paper 06/2016.

10 Apart from availability of long-term yields, EMEs are selected based on at least one of the following three criteria: (1) A member of either the IMF's emerging or developing economies or World Bank's low and middle-income countries; (2) Constituents of the emerging-market government bond indices; and (3) Stock of public debt exceeding US$10 billion or long-term sovereign credit rating above BB/Ba.

11 In constructing other economies impact on the US, we first note that there are 26 shocks from other economies in the VD of the US. We can then classify the shares of AEs and EMEs on the US by summing the relevant individual component. The regional classification of EMEs is done in a similar fashion. In constructing the US impact on others, we need to extract the US shocks appearing in each of the 26 VDs of other economies and group them accordingly.

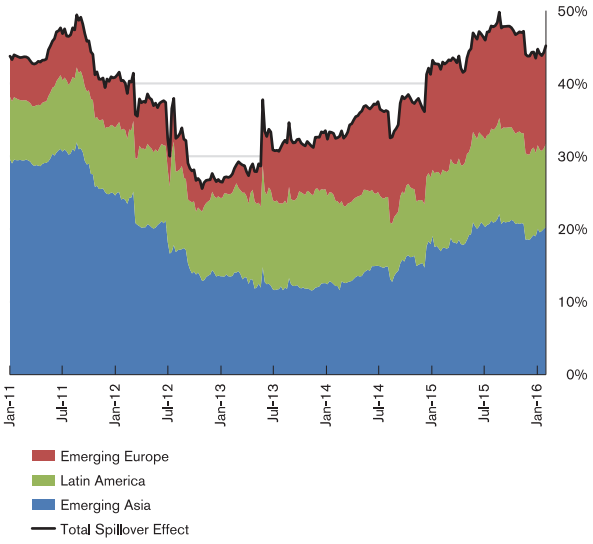
Fixing the origin of the shock, the last row of Table B1.B computes the column average which shows the impact of that shock on other economies. It shows that US's shock is the largest (21%), followed by other AEs (17%), Emerging Europe (11%), Latin America (10%), and Emerging Asia (7%). This suggests US's shock has the largest spillover effect on others, while the shock from Emerging Asia is relatively modest in general. Fixing the receiver of the shock, the last column of Table B1.B computes the row average which summarises the responsiveness of that receiver to shocks generated from others. For example, the US is found to have the largest responsiveness to shocks from the others (16%).

Spillovers between US and EMEs

Given that the US as a single economy has a substantial spillover effect to other economies, we employ a 200-week rolling window to assess the extent and nature of spillovers between the US and EMEs over time. The VD is calculated based on a forecasting horizon of ten-week. The first window starts from March 2007 to February 2011 and the last window starts from January 2012 to January 2016.

Charts B1.3 and B1.4 depict the spillover effects from the US to EMEs and the other way round respectively. Measured by the VDs, the total spillover effect from the US to the three EME groups has increased from 30% in early 2013 to almost 50% in late 2015 (Chart B1.3). The considerable increase is ascribed to growing responses of Emerging Europe (shaded in red) and Asia (shaded in blue) to the US shock. The response of Latin America to the US shock (shaded in green), however, remains generally steady. From the three EME groups to the US, the total spillover effect has also increased notably after the taper tantrum in May 2013 (Chart B1.4). In particular, the spillover effects from Emerging Europe and Latin America have picked up substantially in share since mid-2013, which could be partly due to the second-round effect[12] of the US tapering shock reverting back to the US from the EMEs with weaker economic fundamentals such as slower economic growth and larger current account deficits.[13] Meanwhile, Asia's share which explains most of the VD of the US Treasury yield among the three EME groups before mid-2012, falls and steadies at a level of 10% in the last four years.

Chart B1.3
Spillover from the US to EMEs

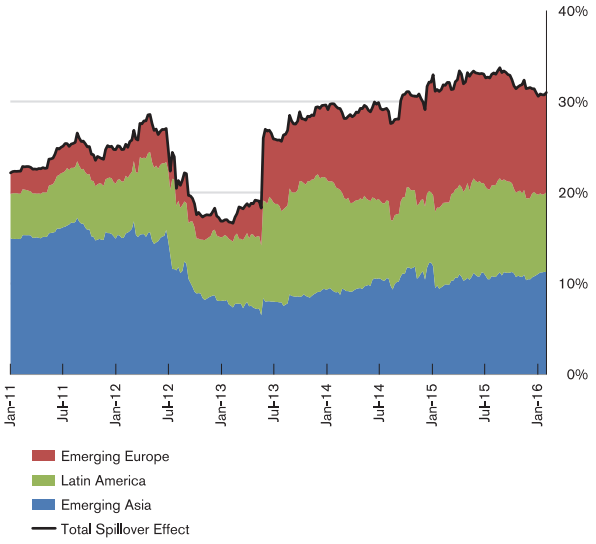


Source: HKMA staff estimates.

[12] The second-round effect denotes the spillovers from receiver countries back to transmitter countries through trade and financial linkages. For details, see Balakrishnan et al. (2009) "The Transmission of Financial Stress from Advanced to Emerging Economies", *IMF Working Paper* 09/133.

[13] According to the World Bank's data, when compared with Emerging Asia, EMEs in Emerging Europe and Latin America on average had lower real GDP growth and larger current account deficit in 2013.

Chart B1.4
Spillover from EMEs to the US



Source: HKMA staff estimates.

Conclusion

We find significant interdependence between AEs and EMEs in sovereign bond markets after the global financial crisis. In particular, while shocks originated from the US have a sizeable effect on the EMEs, the reverse side could at times be tangible as well. The fact that sovereign bond yields in the US and EMEs have increasingly synchronised could have been attributable to the fact that (i) as policy rates remain low in many economies, search for yield behaviour has manifested into a yield compression globally; and (ii) banks and insurers are now required to hold more safe assets such as government securities because of regulatory requirements.

From a monetary policy perspective, this analysis implies that the exit from the zero lower bound in the US may have potent spillovers on EMEs on one hand. On the other hand, any monetary policy shocks originated from EMEs could generate undue pressure on the US and affect its subsequent policy decisions. This two-way interaction between the US and EMEs could pose challenges for central banks in formulating monetary policies independently.

Box 2
US dollar liabilities of non-financial firms in Mainland China: How large is the default risk?

Introduction

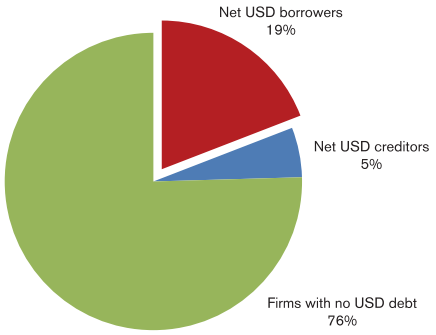
The ongoing interest rate normalisation in the US and increased renminbi depreciation expectations against the US dollar have raised concerns over the vulnerability of the fast expansion in Mainland external debt over the past few years, especially the part taken on by the corporate sector. During the current economic slowdown, the worsening financial conditions of Mainland manufacturers have made loan repayment abilities of these corporate borrowers a concern for both policy makers and market analysts.

Against this background, using financial data including US dollar loans and deposits of more than 2,300 Mainland listed non-financial firms at the end of 2014 when foreign currency borrowing reached its peak, this analysis attempts to answer the following questions: 1) how leveraged are Mainland firms in US dollar credit and what is the US dollar borrowing pattern among these firms, 2) where do the vulnerabilities lie, and 3) how large is the risk associated with further depreciation of the renminbi against the US dollar.

US dollar borrowing pattern among Mainland firms

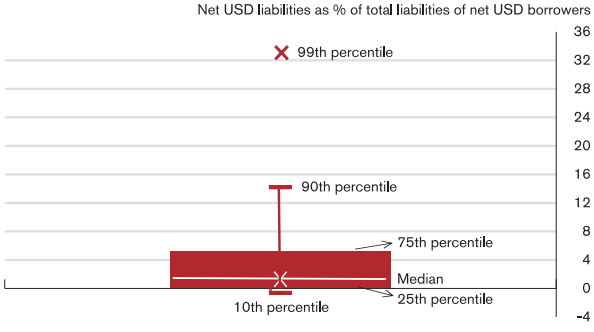
Listed company data suggests that only a limited proportion of Mainland enterprises had net US dollar liabilities and on average the size was not large.[14] By the end of 2014, only less than a quarter of listed Mainland non-financial firms reported to have borrowed US dollar loans, among which around 78%, or equivalent to 19% of all listed non-financial firms, were net US dollar corporate borrowers with their US dollar loans larger than US dollar deposits (Chart B2.1). Net US dollar borrowers are of particular interest as they are exposed to the risk of renminbi depreciation. In our sample, 90% of these net US dollar borrowers had net US dollar liabilities to total liabilities ratios below 15%, suggesting that for most of these net US dollar borrowers the exposure to renminbi depreciation was limited (Chart B2.2). Nonetheless, the other 10% had relatively higher net US dollar liabilities to total liabilities ratios. For instance, the most leveraged firms (at the 99th percentile) in terms of net US dollar borrowing reported to have a net US dollar liabilities to total liabilities ratio of around 33%.

Chart B2.1
Exposure of Mainland non-financial listed firms to US dollar borrowing



Sources: WIND and HKMA staff estimates.

Chart B2.2
Net US dollar liabilities to total liabilities ratio of net US dollar borrowers

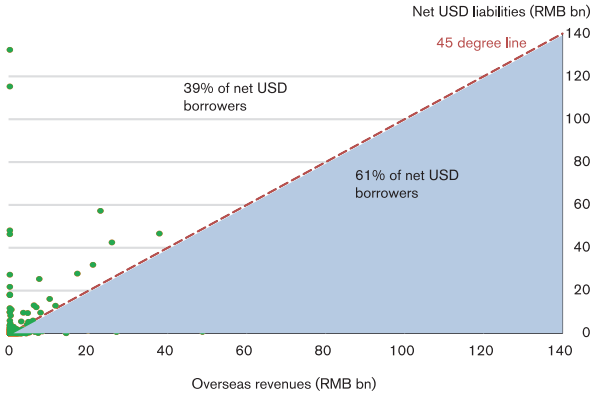


Sources: WIND and HKMA staff estimates.

[14] Due to data limitation, only data on foreign currency loans rather than other debt instruments such as bonds are available for Mainland listed firms. By net US dollar liabilities we therefore refer to the difference between US dollar loans and deposits.

Net US dollar corporate borrowers in Mainland China tended to be larger in size, and most of them had overseas business income. In our sample of listed non-financial Mainland firms, net US dollar borrowers on average had larger total assets compared with net US dollar creditors. In particular, the median size of net US dollar borrowers was RMB6.8 billion, while that of net US dollar creditors was RMB3.8 billion. The positive correlation between firms' sizes and their exposure in US dollar borrowing in one way may reflect the fact that larger firms in Mainland China had better access to credit markets, even for foreign currency borrowing.

Chart B2.3
Net US dollar liabilities vs 1-year overseas revenues of net US dollar borrowers

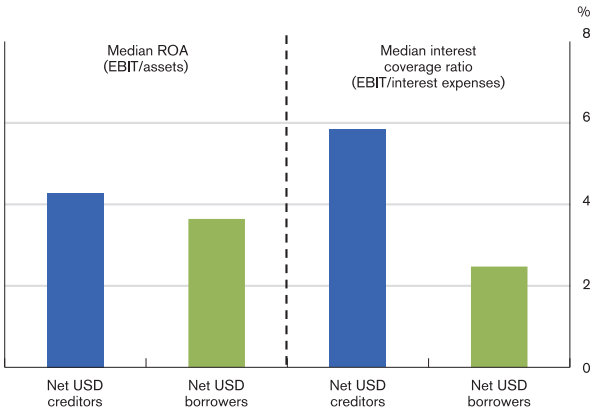


Sources: WIND and HKMA staff estimates.

Where do the vulnerabilities lie?

The exposure of Mainland firms to currency mismatch appeared to be small. Among the net US dollar borrowers, 75% had overseas revenues, and 61% enjoyed "natural hedge", with their net US dollar liabilities being able to be covered by 1-year overseas revenues (Chart B2.3). However, net US dollar borrowers in general tended to have weaker financial positions and thus lower loan repayment abilities compared with net US dollar creditors. While the profitability of net US dollar borrowers was comparable to that of net US dollar creditors, net US dollar borrowers had a lower median interest coverage ratio of 2.5 compared with 5.8 of net US dollar creditors (Chart B2.4), implying that the borrowers may face more pressure in generating enough revenue to cover their interest expenses. This also reflects the generally higher leverage of net US dollar borrowers compared with net US dollar creditors. For instance, the average liabilities-to-assets ratio of net US dollar borrowers in 2014 was 0.54, higher than that of net US dollar creditors which was 0.43.

Chart B2.4
Profitability and interest coverage ratio: net US dollar creditors vs net US dollar borrowers



Sources: WIND and HKMA staff estimates.

Further analyses suggest that while different sectors faced different risks, net US dollar borrowers in many tradable sectors were more vulnerable. For instance, the risk of currency mismatch of some tradable goods and service sectors, including materials, consumer goods & services, industrial, and IT, is not high as many of them had overseas business income and thus enjoyed "natural hedge" (Table B2.A). Compared with other sectors, these sectors however had higher net US dollar leverage and also faced higher liquidity risk given their much greater reliance on short-term funding. Moreover, loan repayment abilities of these sectors, especially

overcapacity sectors such as materials, were particularly weak, reflected by their extremely low interest coverage ratios, low return on assets (ROA) and high loss-making ratios. In comparison, non-tradable sectors such as real estate and utilities had lower leverage but were exposed to greater currency risks as they do not usually have overseas business income. Loan repayment abilities of these two sectors were in general better than the tradable sectors, though weaker for real estate developers.

Table B2.A
Risks and repayment abilities of Mainland net US dollar loan borrowers by sector

	Materials	IT/ Telecom-munications	Consumer Goods/ Services	Industrials	Energy	Real Estate	Utilities
Leverage							
Average net USD liability ratio of highly leveraged borrowers (75-99 percentile)	21	19	18	18	14	8	8
Currency mismatch							
% of firms with natural hedge	65	74	68	55	35	33	13
Liquidity risk							
Short-term USD loans as % of total USD loans	73	65	77	28	61	39	11
Repayment ability							
Interest coverage (median)	1.7	3.4	2.7	2.5	3.6	2.9	3.3
ROA (median)	3.4	3.3	3.3	3.8	3.7	3.8	6.5
% of loss-making firms	12	10	15	8	18	0	0

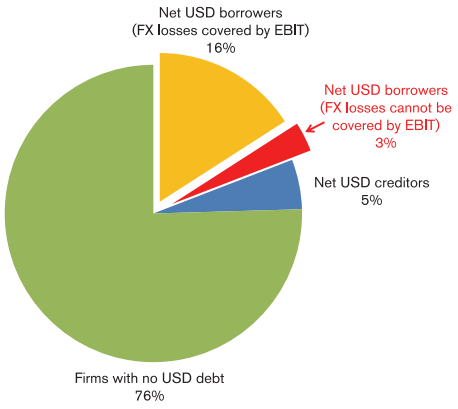
Note: Green, yellow and red shadings indicate that the financial indicators point to low, medium and high risks.
Sources: WIND and HKMA staff estimates.

How large is the risk? A sensitivity test

Given the vulnerabilities identified in the previous section, a natural question is how large the risk would be if the renminbi continues to depreciate against the US dollar given uncertainties in economic outlook and the ongoing normalisation of interest rates in the US. To shed some light on this question, we consider a hypothetical 10% depreciation of the renminbi against the US dollar and then estimate the foreign exchange losses based on firms' reported net US dollar liabilities in 2014, which in turn is compared with their earnings before interest and tax (EBIT).

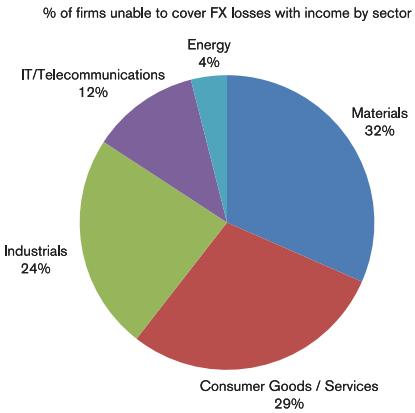
We found that a hypothetical 10% depreciation of the renminbi against the US dollar would cause net US dollar borrowers to suffer foreign exchange losses but 83% of them (or 16% of all listed non-financial firms) could cover their losses by one-year EBIT (Chart B2.5). Firms unable to cover foreign exchange losses by income were mainly concentrated in the most vulnerable sectors, such as materials, consumer goods & services, and industrials (Chart B2.6). Again, our analyses highlight in particular the risks facing overcapacity sectors. For instance, 32% of net US dollar borrowers unable to cover their foreign exchange losses with EBIT in our sensitivity test were from the materials sector.

Chart B2.5
Number of net US dollar borrowers affected in the sensitivity test



Sources: WIND and HKMA staff estimates.

Chart B2.6
Firms unable to cover foreign exchange losses with income by sector



Sources: WIND and HKMA staff estimates.

In particular, loan repayment abilities could be a concern for firms that already made losses while suffering also renminbi depreciation. US dollar loans borrowed by these firms accounted for 5% of total US dollar loans of all listed non-financial companies, concentrating in sectors such as consumer goods & services and materials. Although this implies that the credit risk to US dollar loans of Mainland banks cannot be dismissed, Mainland bank exposure to these loans is relatively small as foreign currency (including US dollar) loans accounted only for around 5-6% of total bank loans in recent years.

Conclusion

Overall, our findings suggest that on average, the exposure of Mainland enterprises to renminbi depreciation is not high given limited US dollar borrowing among Mainland firms. However, some tradable goods and service sectors, especially materials, consumer goods & services, industrials, and IT, are found to be more vulnerable than others due to their higher net US dollar leverage, higher liquidity risk, and weaker repayment abilities. A hypothetical 10% depreciation of the renminbi against the US dollar would lead net US dollar borrowers to suffer foreign exchange losses but only 3% of the firms are found to be unable to cover their foreign exchange losses by EBIT. As US dollar borrowing was concentrated in highly leveraged borrowers, the credit risk to US dollar loans of Mainland banks cannot be totally dismissed, especially US dollar loans borrowed by firms that already made losses. That said, Mainland bank exposure to these loans is relatively small.

It should be noted that our analysis is subject to caveats. First, this analysis focuses only on US dollar loans borrowed by listed firms rather than other debt instruments such as bonds due to data limitation. Second, only listed non-financial firms are studied, and therefore the risk profile of non-listed smaller US dollar loan borrowers is not covered.

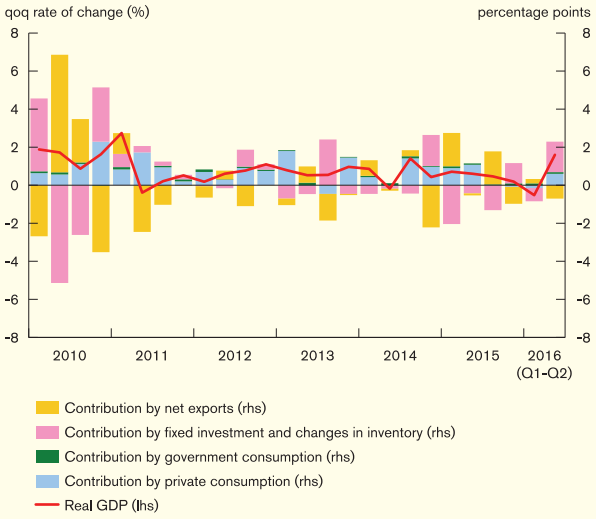
3. Domestic economy

The Hong Kong economy recovered in the second quarter of 2016 after contracting in the first quarter, driven by the pick-up in private consumption as well as building and construction activities. With a highly uncertain global environment, Hong Kong's economic outlook is expected to remain challenging. Local inflationary pressures are expected to remain contained on the back of soft import prices and modest domestic growth.

3.1 Real activities

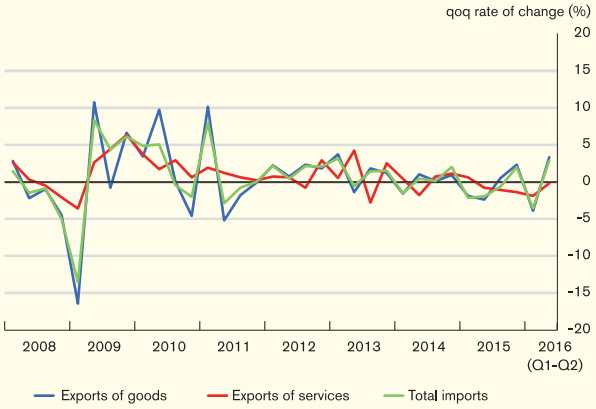
Economic activities in Hong Kong recovered in the second quarter after contracting in the first quarter, but the underlying growth momentum remained slow. Real Gross Domestic Product (GDP) growth moderated further to 1.2% year on year in the first half of 2016 from 2.1% in the second half of 2015. On a seasonally adjusted quarter-on-quarter basis, real GDP increased by 1.6% in the second quarter after a 0.5% decline in the first quarter (Chart 3.1). Investment spending supported the growth rebound in the second quarter, as public infrastructure activities picked up after the delay in funding approvals, while private building and construction activities held up. Growth in private consumption also increased in the second quarter thanks to a mild pick-up in domestic service spending and the low base effect in the first quarter. However, the external sector remained weak, with net exports turning into a drag to real GDP growth in the second quarter. In particular, exports of services continued to decline amid weak inbound tourism spending (Chart 3.2). While exports of goods improved in the second quarter given that exports to Mainland China and Europe picked up, imports of goods also increased on the back of improved re-exports-induced demand.

Chart 3.1
Real GDP growth and contribution by major expenditure components



Sources: C&SD and HKMA staff estimates.

Chart 3.2
Exports and imports in real terms



Source: C&SD.

Labour market conditions eased slightly, with the unemployment rate edging up to 3.4% in July from 3.3% at the end of 2015 (Chart 3.3). The year-on-year growth in total employment also slowed, with the main drag coming from the retail, accommodation and food services sector. Box 3 studies the effects of sectoral and aggregate channels on the overall unemployment rate.

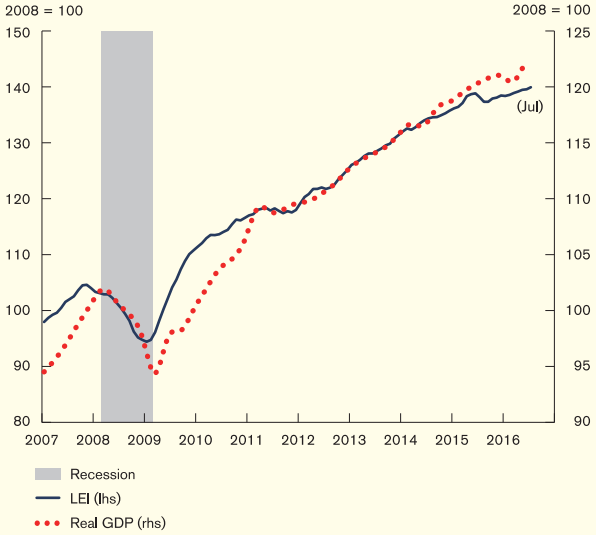
Chart 3.3
Unemployment rate and total employment

Source: C&SD.

Hong Kong's economic growth is expected to remain moderate going forward. Externally, global growth is likely to remain lacklustre amid weakness in trade flows. This, together with the appreciation of the Hong Kong dollar real effective exchange rate due to the US dollar strength, would restrain Hong Kong's external demand. Domestically, consumer confidence may stay soft amid the modest growth momentum and heightened financial market volatility. Private sector construction is expected to hold up on the back of the increased housing construction starts, but business investment activities will likely remain weak in the face of the uncertain business outlook.

The HKMA in-house composite index of leading indicators suggests that Hong Kong's growth momentum will likely remain modest in the second half of 2016 (Chart 3.4). For 2016 as a whole, the Government maintained their real GDP growth forecast of 1-2% , while private sector analysts have revised downward their growth forecasts for 2016 to 1.0% from 1.8% projected in March (Chart 3.4).

Chart 3.4
Real GDP and leading economic indicator



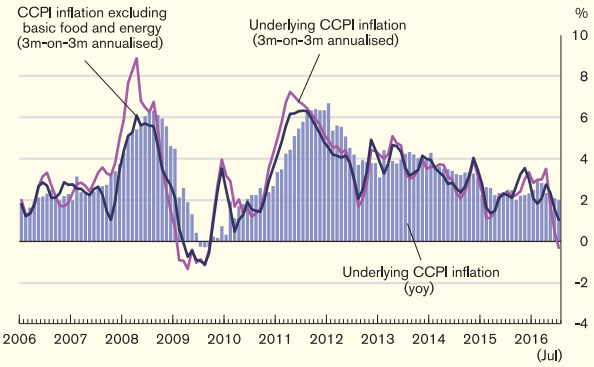
Sources: C&SD and HKMA staff estimates.

The economic outlook for Hong Kong has become more uncertain. On one hand, while market expectation of still-abundant global liquidity could improve market sentiment and provide some support to economic growth in the near term, the uncertainty surrounding the pace and effect of US rate hike will continue to pose headwinds. On the other hand, while the repercussions of Brexit have so far been limited, any adverse development down the road that has a broader impact on the European economy could pose more significant challenge to Hong Kong. In particular, Hong Kong's external trade would be negatively affected, given that Europe is one of Hong Kong's major trading partners, and risk-off sentiments could strengthen the US dollar. In addition, domestic sentiment and financial market conditions may deteriorate, posing headwinds to the property market. Separately, uncertainties surrounding the growth prospects for the Mainland economy would continue to pose risks to Hong Kong's trade performance and its inbound tourism sector.

3.2 Consumer prices

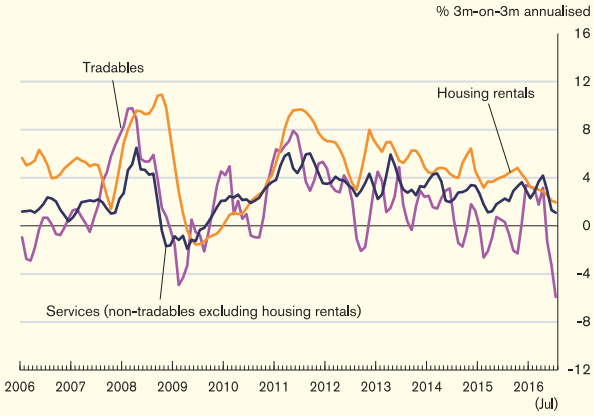
Local inflationary pressures, after picking up somewhat in the first quarter on weather-driven surges in basic food prices, resumed an easing trend in the second quarter. The year-on-year rate of change of the underlying composite consumer price index (CCPI) slowed from 2.8% in the first quarter to 2.3% in the second quarter, and eased further to 2.0% in July (Chart 3.5). Inflation momentum, as measured by the annualised three-month-on-three-month underlying inflation rate, also retreated from 3.5% in April to -0.3% in July. The tapering of inflation momentum was broad-based, with all major CCPI components registering some moderation (Chart 3.6). In particular, the housing rental component continued its downtrend since late 2015 amid the feed-through of the earlier moderation in fresh-letting private residential rentals, while the price of tradables also changed from an increase of 3.2% in April to a decrease of 5.9% in July along with abating food inflation.

Chart 3.5
Different measures of consumer price inflation



Sources: C&SD and HKMA staff estimates.

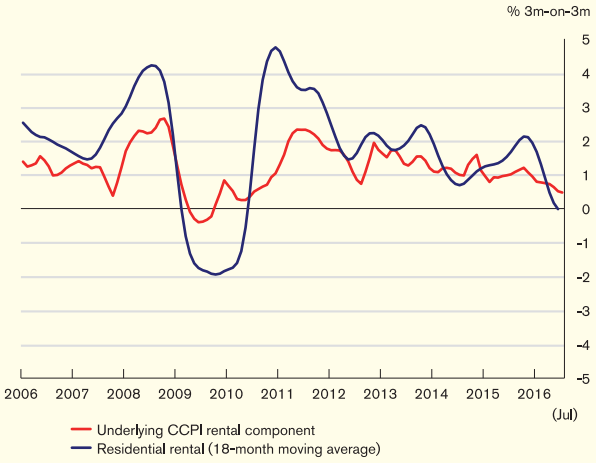
Chart 3.6
Consumer price inflation by broad component



Sources: C&SD and HKMA staff estimates.

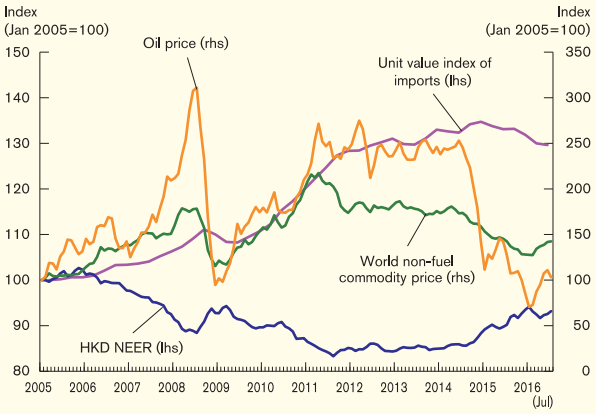
In the near term, upside risks to sequential inflation momentum is likely to remain contained. The output gap, while estimated to have narrowed somewhat in the second quarter, is still negative, which will likely continue to exert a dampening effect on local business costs and hence services inflation. Moreover, fresh-letting private residential rentals, despite a small uptick during the second quarter, stayed below year-ago levels and are likely to contribute to further easing in the housing rental component of the CCPI going forward (Chart 3.7). On the external front, import price inflation will likely remain constrained by the strong Hong Kong dollar (Chart 3.8). Against this background, local inflation is expected to moderate further in 2016, with the government forecasting an annual underlying inflation rate of 2.2%, down from 2.5% in 2015.

Chart 3.7
CCPI rental component and market rental



Sources: C&SD and Rating and Valuation Department.

Chart 3.8
Commodity and import prices



Sources: C&SD and IMF.

The inflation outlook is clouded by various uncertainties. On the downside, should the shocks from Brexit and their repercussions to the global economy turn out to be more severe or long-lasting than envisaged, the resulting gyrations in investor sentiment and global financial market volatilities could add to downside risks to the local property market. Further consolidation in the local residential property market, in turn, could weigh on housing rentals and pose a drag on consumer sentiment via negative wealth effect. Moreover, should the European economy be significantly affected by Brexit, Hong Kong's near-term growth prospects will likely deteriorate given the relatively strong trade linkages between Hong Kong and the European Union, thereby adding to disinflationary pressures by aggravating Hong Kong's negative output gap and impinging upon the local labour market. Nonetheless, a mitigating factor is a slower US Federal Reserve's interest rate normalisation process amid heightened post-Brexit uncertainties, which might provide a breather to Hong Kong's monetary conditions and domestic demand in the near term, thereby possibly lending some short-term support to the local property market and rentals.

Box 3
The unemployment rate of Hong Kong: The effects of aggregate and sectoral channels

The unemployment rate has stayed at low levels since mid-2011. Our previous analysis[15] suggested that the resilience of the labour market was due partly to restrained supply of and strengthened demand for lower-skilled labour. In particular, the booming inbound tourism over the past years played an important role in creating more jobs in the retail and other tourism-related sectors, which tended to hire more lower-skilled labour.

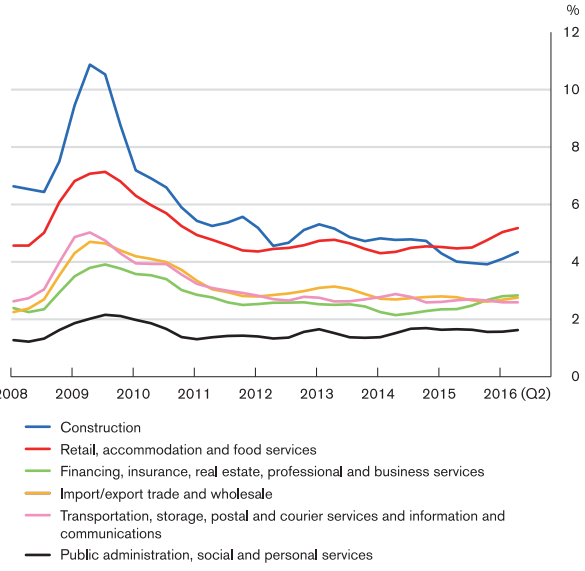
With inbound tourism experiencing a downturn since 2015, the unemployment rate for the tourism-related sector has picked up in recent months, posing headwinds to the overall labour market. The worry is that even if the weakness in the tourism-related sectors represented mainly a sectoral phenomenon (i.e. sectoral channel), the reallocation of labour from these sectors to other sectors may not happen in an instantaneous manner. Moreover, the weakness might also be part of an aggregate phenomenon facing all sectors (i.e. aggregate channel). Against this backdrop, this Box analyses the effects of aggregate and sectoral channels on the overall unemployment rate, with an aim to shed light on the near-term outlook for the labour market.

Sectoral developments in unemployment rates

Along with more moderate aggregate economic momentum, some major economic sectors have seen more visible uptick in their unemployment rates more recently (Chart B3.1). For example, in the retail, accommodation and food services sector, the seasonally adjusted unemployment rate started to climb in mid-2015 and has risen by a total of 0.7 percentage points in mid-2016.

But partly reflecting the resilience of other major economic sectors, especially the public administration, social and personal services sector, there have been no synchronised rises in the short term trends of the sectoral unemployment rates, and the overall unemployment rate increased only marginally by around 0.1 percentage points in the first half of 2016.

Chart B3.1
Sectoral unemployment rates



Sources: C&SD and HKMA staff estimates.

Decomposition of sectoral output: sectoral vs aggregate shocks

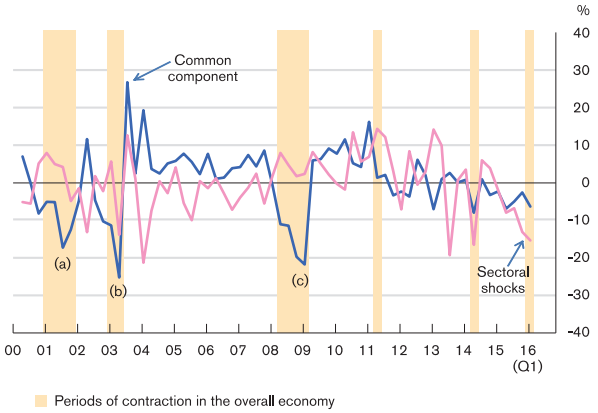
Taken together, these patterns seem to suggest that some of the economic sectors may have been more affected by sector-specific disturbances, rather than economy-wide shocks. Using a pure statistical factor model[16] that decomposes sectoral GDP growth rates into

[15] See Box 2 separately in the September 2012 and March 2014 issues of this Report.

[16] For more details on the methodology, see Foerster, et al. (2011), "Sectoral versus Aggregate Shocks: A Structural Factor Analysis of Industrial Production", *Journal of Political Economy*, 119(1), pp. 1-38.

sectoral shocks and a common component affected by aggregate shocks, we find that the retail and wholesale sector is a case in point.[17] In particular, the decomposition results indicate that negative sectoral shocks were relatively more important than aggregate shocks in driving the recent output contraction in this sector (Chart B3.2). The question then turns to the role of sectoral shifts in driving the overall unemployment rate.

Chart B3.2
Decomposing annualised growth in the value-added of the retail and wholesale sector



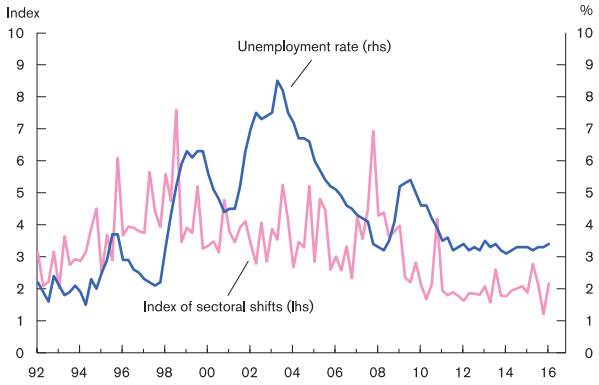
Notes: (a) The burst of IT bubble and the downturn in the US; (b) the outbreak of severe acute respiratory syndrome; and (c) the fallout of the global financial crisis.
Source: HKMA staff estimates.

Relationship between sectoral shifts and the aggregate unemployment rate

Theoretically, sector-specific shocks can cause fluctuations in the overall unemployment rate, as labour reallocation from contracting sectors to expanding sectors may not be instantaneous.[18] Under such theory, the greater the dispersion of employment demand, the higher the aggregate unemployment rate will be. To measure the extent of sectoral shifts, we follow the literature[19] and construct such an index by computing the standard deviation of sectoral employment growth rates. Since the raw sectoral employment growth rates may also reflect the impact of aggregate shocks, we use the statistical factor analysis to purge the growth rates from such aggregate influences. To compile the index, we use the data on the number of persons engaged from the Quarterly Survey of Employment and Vacancies, which provides longer data and a more detailed sectoral breakdown (over 50) than the General Household Survey.

A cursory look at the data suggests that the measured index of sectoral shifts broadly co-moved with the overall unemployment rate (Chart B3.3). Indeed, the index of sectoral shifts coincided quite well with the ups and downs of the unemployment rate prior to 2001 and the downtrend between 2004 and 2007. The rise in the unemployment rate during the global finance crisis was also preceded by a surge in the index of sectoral shifts. After 2010, the index hovered at a low level and ran parallel to the flat-lined unemployment rate.

Chart B3.3
Relationship between sectoral shifts and the unemployment rate



Sources: C&SD and HKMA staff estimates.

[17] The estimated common component and sectoral shocks would be more precise if the input-output linkages of different economic sectors were also taken into account, as such linkages may cause some sectoral shocks to be captured as part of the common component. Data on the input-output linkages of different sectors in Hong Kong, however, are not available.

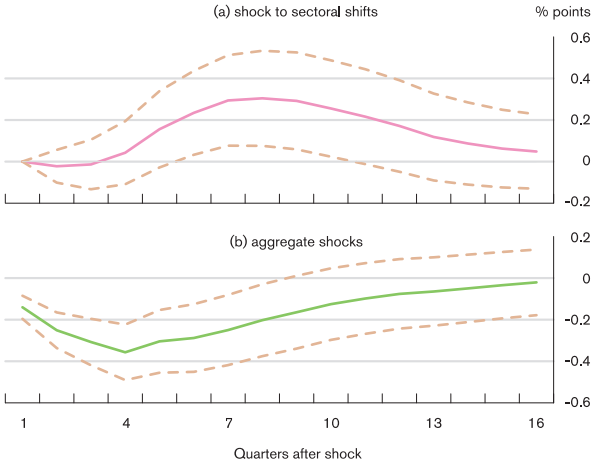
[18] The classic reference is Lilien (1982) "Sectoral Shifts and Cyclical Unemployment", *Journal of Political Economy*, 90(4), pp. 777-793. For a recent survey of the literature, see Gallipoli and Pelloni (2013), "Macroeconomic Effects of Job Reallocations: A Survey", *Review of Economic Analysis*, 5(2), pp. 127-176.

[19] There are a number of ways to calculate such index. Please see the survey paper cited in footnote 18. Our method is akin to the one adopted in Mehrotra and Sergeyev (2013) "Sectoral Shocks, the Beveridge Curve and Monetary Policy" No. 919, 2013 Meeting Papers, Society for Economic Dynamics.

Empirical results and the relative importance of aggregate and sectoral shocks

To further understand the impact of sectoral shifts and aggregate shocks, a vector auto-regression (VAR) model is constructed with the following five variables: real GDP growth, the unemployment rate, the inflation rate, 3-month Hong Kong Interbank Offered Rate and the index of sectoral shifts.[20] The real GDP growth helps identify the impact of aggregate shocks and is expected to be negatively correlated with the overall unemployment rate. The inclusion of inflation rate may allow for a Phillips curve relationship. The interest rate is intended to capture the effect from monetary conditions. Finally, the index of sectoral shifts proxies for the sectoral shock channel and is expected to be positively correlated with the aggregate unemployment rate. The sample period runs from the third quarter of 1992 to the first quarter of 2016 and a lag length of five is chosen based on log-likelihood criterion. In line with expectation, impulse response functions generated from the estimated VAR model suggest that an unexpected increase in the real GDP growth – interpreted as an aggregate shock – would decrease the overall unemployment rate while the rise in the index of sectoral shifts would increase it (Chart B3.4).

Chart B3.4
Response of the unemployment rate to aggregate and sectoral shifts shocks



Notes: The shock to sectoral shifts pertains to a one-standard-deviation increase in the index and the aggregate shock is a one-percentage-point rise in GDP growth. The solid lines refer to the response functions and the dashed lines the standard error bands.

Source: HKMA staff estimates.

To further gauge the relative importance of aggregate and sectoral shocks, we carry out a forecast error variance decomposition of the overall unemployment rate. The decomposition exercise reveals that the impact of aggregate shocks was more important relative to the sectoral shifts disturbances at all selected horizons (Table B3.A). In fact, more than 50% of the forecast error variance was accounted for by aggregate shocks at or below the two-year horizon. The effect of the sectoral shifts only became more significant beyond the one-year horizon, contributing around 7-25% of the forecast error variance.

Table B3.A
Forecast error variance decomposition of the unemployment rate

Forecast horizon (quarters)	Forecast error variance decomposition (percentage points)		
	Sectoral shifts	Aggregate shocks	Unemployment rate
4	0.4	61	34
6	7	62	26
8	18	58	20
16	25	46	16

Note: For ease of exposition, other variables' contribution is not shown here.

Source: HKMA staff estimates.

[20] The system is identified following the standard recursive ordering procedure. The sectoral shifts index is placed last in the estimation ordering. Hence, the sectoral shifts index can respond contemporaneously to innovations to real GDP growth, the unemployment rate, etc, while these variables respond to innovations to sectoral shifts index only with a lag. In addition, a generalised impulse response analysis, which is invariant to the ordering of the variables, is also conducted and similar estimation results are obtained.

Implications for the current labour market situation

This study analyses the role of sectoral shifts and aggregate shocks in driving the overall unemployment rate. We find that historically, sharp changes in the overall unemployment rate were mainly driven by aggregate shocks instead of sectoral shifts over the past 24 years. It may be due to the fact that the mobility of labour can help alleviate the impact of sectoral shifts on the overall unemployment rate.

The retail and wholesale sector has lost steam amid weak inbound tourism and sluggish domestic demand. Our estimation results suggest that sector-specific shocks were relatively more important than aggregate shocks in driving the weakness in this sector. Thus, the sectoral shifts in employment demands induced by it would unlikely worsen the overall unemployment rate much.[21] However, if the broader economy weakens further, the overall unemployment rate would face stronger upward pressure due to the aggregate effect.

[21] With all that said, it may be the case that sectoral shifts in the past happened mainly among sectors hiring similar type of labour (i.e. either skilled or unskilled), and hence the mobility of labour across sectors would limit the impact of such shift on the overall unemployment rate. If sectoral shifts, however, were to occur among sectors hiring different type of labour with limited substitutability, then the impact of such shift on the overall unemployment rate may be bigger.

4. Monetary and financial conditions

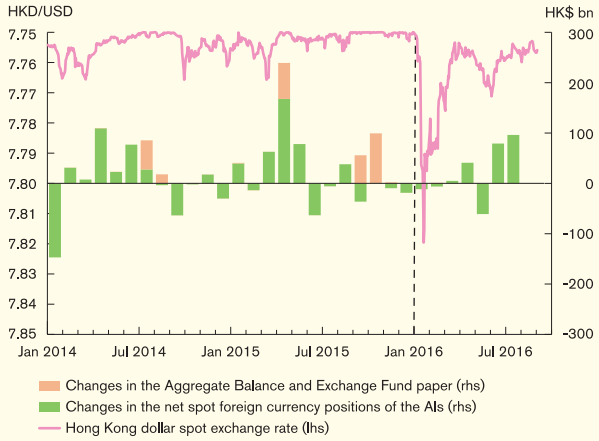
Exchange rate, capital flows and monetary developments

The Hong Kong dollar exchange rate remained broadly stable despite shifts in market sentiment and the United Kingdom's vote to leave the European Union. Total loans also reverted to a moderate increase, in part supported by the recovery in the domestic economic activities. Going forward, the uncertainty stemming from US interest rate normalisation and the Brexit developments will continue to overshadow fund flows.

4.1 Exchange rate and capital flows

The Hong Kong dollar spot exchange rate remained broadly stable despite shifts in market sentiment and increased economic uncertainty stemming from Brexit (Chart 4.1). After some strengthening in March due in part to improved market sentiment and ordinary commercial demand for the Hong Kong dollar, the Hong Kong dollar spot exchange rate softened again in April and May amid the growing expectation of a further US interest rate hike. The Hong Kong dollar exchange rate regained some strength after the US Federal Open Markets Committee decided to keep interest rates unchanged at its meeting on 14-15 June. While the United Kingdom's (UK) vote to leave the European Union (EU) in late June (Brexit) sent shock waves through the global financial markets, the Hong Kong dollar exchange rate remained calm. In fact, there were net Hong Kong dollar inflows into the non-bank private sector in July, as suggested by the rise in the net spot foreign currency positions of banks. The Convertibility Undertaking was not triggered during the review period (Chart 4.2).

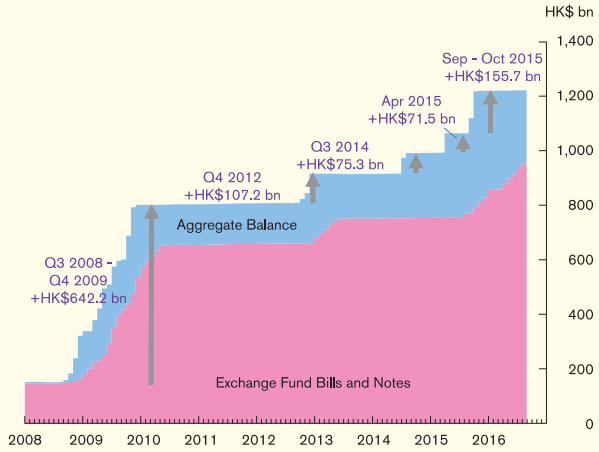
Chart 4.1
Exchange rate and fund flow indicators



Note: For fund flow indicators, a positive value indicates inflows and the change in the net spot foreign currency positions of the AIs for August and September are not yet available.

Sources: HKMA and staff estimates.

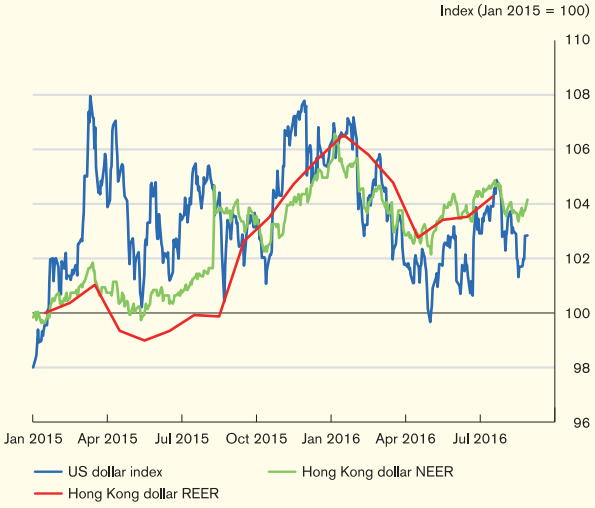
Chart 4.2
Fund flow indicators



Source: HKMA.

Broadly consistent with the movements of the US dollar, the Hong Kong dollar nominal effective exchange rate index (NEER) softened in the first quarter but strengthened somewhat thereafter (Chart 4.3). The Hong Kong dollar real effective exchange rate index (REER) showed similar trends as the nominal index, because the slightly positive, but narrowing, year-on-year inflation differential between Hong Kong and its trading partners exerted only small influences on the overall real exchange rate movements.

Chart 4.3
Nominal and real effective exchange rates



Note: Real effective exchange rate index is seasonally adjusted and only available on a monthly basis.
Sources: C&SD and HKMA staff estimates.

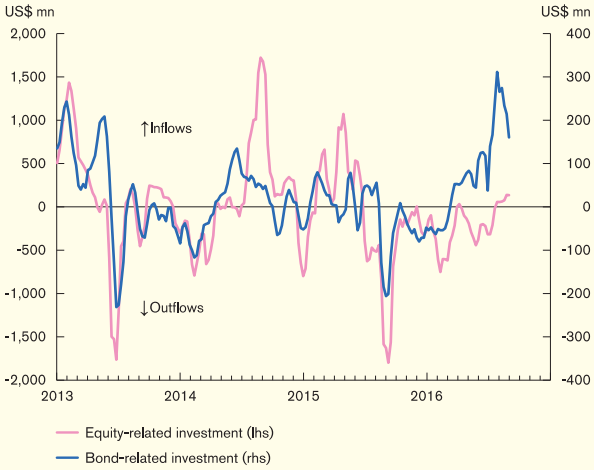
As for capital flows, equity-related investments experienced outflow pressures in the first seven months but some inflows in August. According to the latest Balance of Payments (BoP) statistics, there were net equity portfolio investment outflows in the first quarter as non-residents continued to reduce their holdings of Hong Kong equity and investment fund shares amid a sell-off in the local stock market (Table 4.A).[22] A survey from global mutual funds further shows that equity-related outflows broadly continued between April and July, but at a somewhat narrower pace (Chart 4.4). In August, there were even some equity-related inflows alongside a pickup in local stock prices. On the other hand, debt portfolio investment saw more inflows as Hong Kong banks notably scaled back their holdings of foreign bonds in the first quarter while investors had invested in more Hong Kong bonds since the second quarter in part reflecting more issuance of Hong Kong dollar debt by multilateral development banks (MDBs) for infrastructural investment purposes (see also section 4.4).

Table 4.A
Cross-border portfolio investment flows

	2014	2015	2015				2016
(HK$ bn)			Q1	Q2	Q3	Q4	Q1
By Hong Kong residents							
Equity and investment fund shares	-318.2	-407.8	-105.4	-97.5	8.9	-213.8	22.5
Debt securities	42.1	-361.3	-81.0	-109.3	-122.0	-49.0	111.6
By non-residents							
Equity and investment fund shares	136.7	-375.6	-119.4	-198.9	-26.4	-30.9	-48.5
Debt securities	75.0	49.9	23.0	10.5	-5.7	22.1	-0.9

Note: A positive value indicates capital inflows.
Source: C&SD.

Chart 4.4
Market survey of equity and bond-related flows



Note: Data refer to moving four-week sums.
Source: EPFR Global.

Going forward, the direction and scale of Hong Kong dollar fund flows remain highly uncertain, in part depending on the developments of Brexit

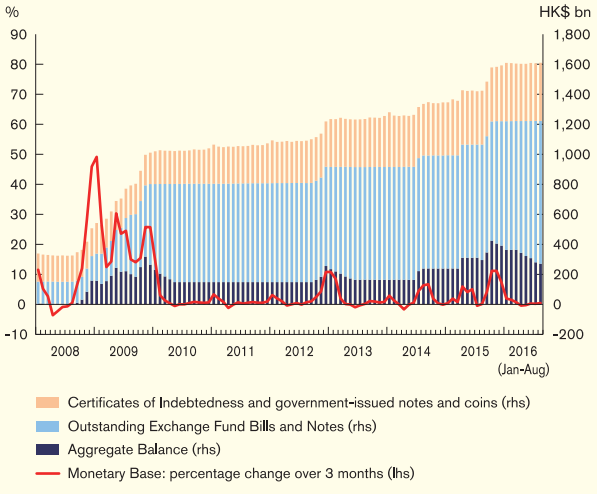
[22] At the time of writing, the second-quarter BoP statistics were not yet available.

and the US interest rate normalisation process. While still-abundant global liquidity may induce gross inflow pressures on the Hong Kong dollar alongside investments in Mainland China equities listed in Hong Kong, such pressures may be restrained as local economic conditions have become less favourable to support a stronger cyclical economic expansion.

4.2 Money and credit

Hong Kong's monetary conditions remained accommodative in the first half of 2016 and in recent months, with the Hong Kong dollar Monetary Base remaining at sizeable levels. The total of the Aggregate Balance and the outstanding Exchange Fund Bills and Notes (EFBNs) remained largely steady at around HK$1,222.4 billion during the first half (Chart 4.5), with the contraction of the Aggregate Balance being offset by the expansion in the outstanding EFBNs amid issuances of additional Exchange Fund Bills (which amounted to HK$83 billion) to meet the strong demand by banks for liquidity management. With slight increases in Certificates of Indebtedness and Government-issued notes and coins in circulation, the Monetary Base grew by a modest 1.0% in the first half.

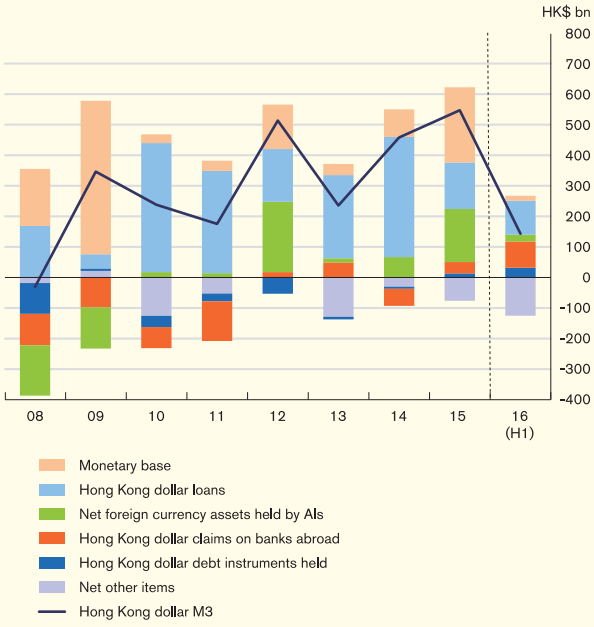
Chart 4.5
Monetary Base components



Source: HKMA.

Compared with the Monetary Base, the Hong Kong dollar broad money supply (HK$M3) expanded at a faster pace, in part reflecting the money creation from stronger Hong Kong dollar loan growth. The HK$M3 picked up by 2.3% in the first half of 2016 after edging down by 0.2% in the second half of 2015. As the main component of HK$M3, Hong Kong dollar deposits grew by 2.6% after declining by 0.5% in the second half of 2015 (Chart 4.7). Such pick-up was in part driven by an increase in demand and savings deposits amid stabilisation in the equity market between March and May. Analysed by the asset-side counterparts, growth in the HK$M3 mainly reflected the increases in Hong Kong dollar loans and Hong Kong dollar net claims on banks abroad (Chart 4.6).

Chart 4.6
Changes in the HK$M3 and the asset-side counterparts



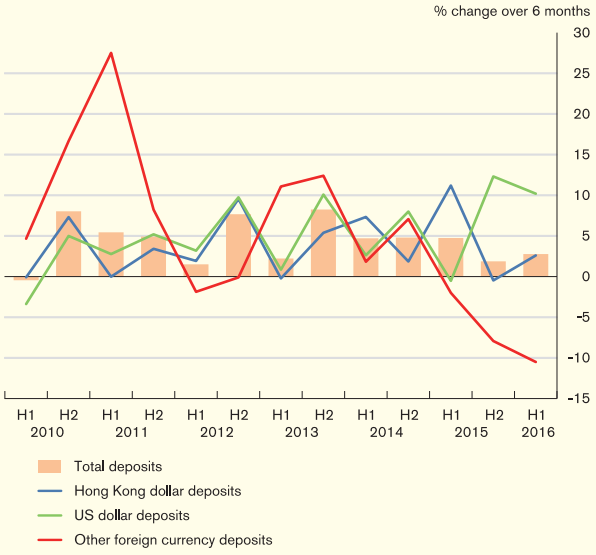
Note: The HK$M3 in the monetary survey has been adjusted to include foreign currency swap deposits and to exclude government deposits and Exchange Fund deposits with licensed banks.

Source: HKMA staff estimates.

On the other hand, with heightened volatilities in the foreign exchange market, US dollar deposits and other foreign currency deposits showed mixed performance during the first half. Partly reflecting the continued increase in US dollar deposits held by Mainland non-bank

customers in response to the renminbi depreciation, growth in US dollar deposits remained strong at 10.2% in the first half (Chart 4.7). Meanwhile, other foreign currency deposits fell at a sharper pace of 10.5%, mainly due to the contraction in renminbi deposits. As a whole, total deposits with the authorized institutions (AIs) rose slightly faster by 2.8% in the first half of 2016.

Chart 4.7
Deposit growth



Source: HKMA.

With liquidity in the banking system remaining abundant, Hong Kong dollar interest rates continued to stay at low levels during the first half. The three-month Hong Kong Interbank Offered Rate (HIBOR) fixing rate stabilised at around 0.54% in the second quarter after facing upward pressures in early 2016 (Chart 4.8), while the overnight HIBOR fixing rate continued to hover at low levels of about 0.05%, only seeing fluctuations around the end of each quarter due to banks' seasonal liquidity needs. Broadly following its US dollar counterpart, the Hong Kong dollar yield curve flattened and generally shifted downward in the first half. In particular, the average yield of 10-year Hong Kong Government Bond decreased to 1.14% in June from 1.65% six months earlier. At the retail level, banks' average funding costs (measured by the composite interest rate) remained steady at a low level of 0.26%. The average lending rate for new mortgages declined slightly to 1.90% in June from 1.93% in December last year, in part reflecting increased competition for mortgage lending business.

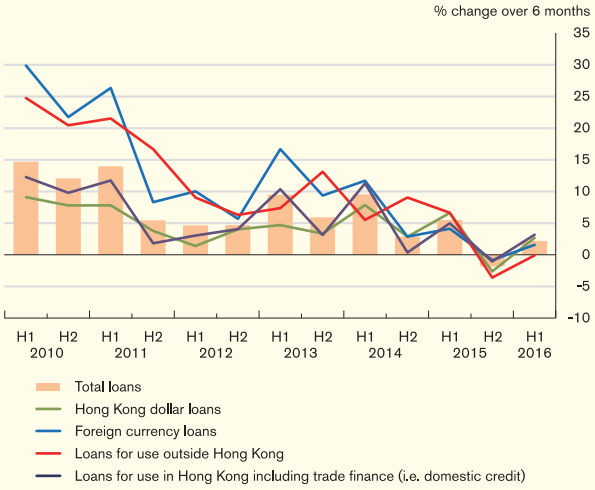
Chart 4.8
Hong Kong dollar interbank interest rates and yield of the 10-year Government Bond

Sources: HKMA and staff estimates.

Bank credit resumed expansion along with the stabilisation of the macro-financial environment, yet the underlying momentum remained modest amid weak credit demand. Total bank loans reverted to a moderate increase of 2.2% in the first half following a 1.8% decline in the preceding half-year period (Chart 4.9). Recovering along with the domestic economic activity during the second quarter, loans for use in Hong Kong increased by 3.2% in the first half compared with a 1.1% decline in the preceding half-year period. On the other hand, despite the resumption of positive growth in the second quarter, loans for use outside Hong Kong edged down by 0.1% in the first half of 2016, mainly reflecting the cut-back of foreign currency borrowings by Mainland non-bank customers amid the renminbi depreciation in the first

quarter. By currency, reflecting the strong increase in the second quarter, Hong Kong dollar loans and foreign currency loans expanded by 2.7% and 1.6% respectively during the first half. At the start of the third quarter, total loans stayed virtually unchanged in July compared with the end of June.

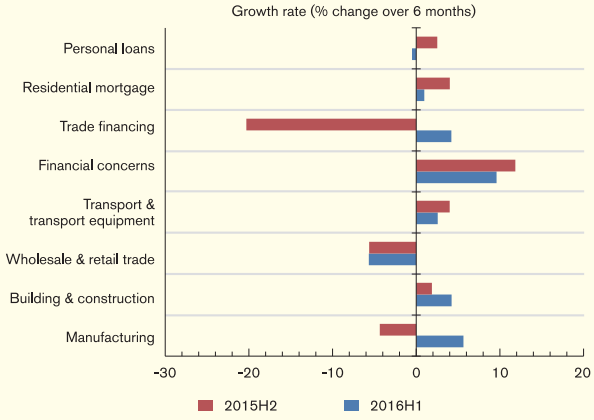
Chart 4.9
Loan growth



Source: HKMA.

Within loans for use in Hong Kong, loans to most major business sectors registered positive growth during the first half. Trade finance and loans to manufacturing resumed positive growth in the first half (Chart 4.10), reflecting the improvement in merchandise trade flows and domestic economic activities in the second quarter. Loans to financial concerns continued to expand strongly in the first half, while loans to building, construction and property development increased at a faster pace on the back of the private construction activities in the pipeline. While continuing to decline in the first half as a whole, loans to wholesale and retail trade registered positive growth in the second quarter amid signs of stabilisation in retail sales performance.

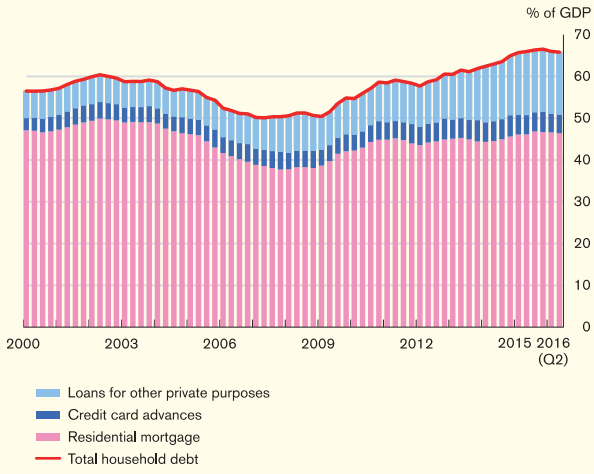
Chart 4.10
Growth in domestic loans by selected sectors



Source: HKMA.

Growth in household debt moderated to 0.5% in the first half from 3.6% in the second half of 2015. Within the total, personal loans (which comprise credit card advances and loans for other private purposes) dropped by 0.5%, the first decline since the first half of 2009. Growth in residential mortgage loans also slowed further to 1.0%, mainly reflecting the weak housing transactions during the first quarter. With growth in household debt slowing, the household debt-to-GDP ratio declined to 65.8% in the second quarter from 66.5% in the fourth quarter of 2015 (Chart 4.11).

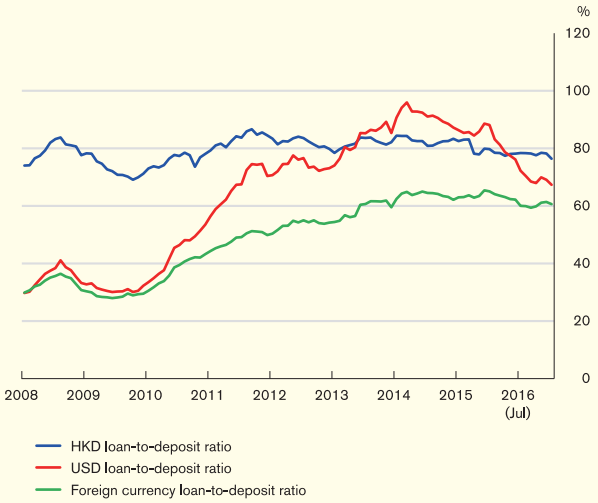
Chart 4.11
Household debt-to-GDP ratio and its components



Note: Only borrowings from AIs are covered.
Source: HKMA.

Banks' funding conditions remained stable, as indicated by the steady loan-to-deposit (LTD) ratios. Reflecting the relative changes in deposits and loans, the Hong Kong dollar LTD ratio registered 78.2% at the end of June, unchanged compared with the end of 2015 (Chart 4.12). As US dollar deposits continued to expand while US dollar loans stayed flat, the US dollar LTD ratio dropped to 69.1% at the end of June from 76.1% registered six months earlier. The foreign currency LTD ratio moved down slightly to 61.4% from 62.2% during the same period.

Chart 4.12
LTD ratios



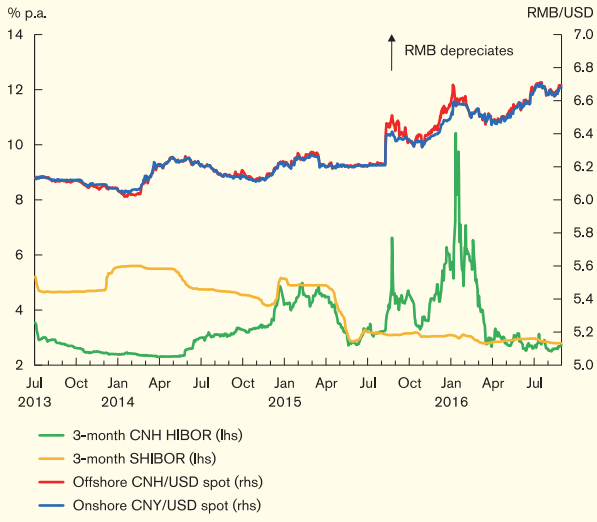
Source: HKMA.

Going forward, credit demand may on one hand be supported by the continuation of accommodative monetary stance in the advanced economies, while on the other hand be restrained by the cautious business outlook and heightened uncertainties surrounding the external environments. The latest HKMA Opinion Survey on Credit Condition Outlook still points to an expected decline in credit demand in the next three months (Table 5.A of Chapter 5).

Offshore renminbi banking business

Reflecting market concerns about the Mainland economy and the strengthening of the US dollar amid risk-off flows and expectation of US rate hike, both the onshore (CNY) and the offshore (CNH) renminbi exchange rates have weakened since April (Chart 4.13). Moving into the third quarter, the CNH once reached again in mid-July the low level of 6.7 per US dollar registered in January. Meanwhile, after widening to very high levels in January, the discount of the CNH exchange rate vis-à-vis its onshore counterpart has been broadly contained at moderate levels since March. Despite occasional pick-ups, the CNH interbank interest rates have also been largely stable, with the three-month CNH HIBOR closing at 2.73% at the end of August.

Chart 4.13
CNY and CNH exchange rates and interbank interest rates

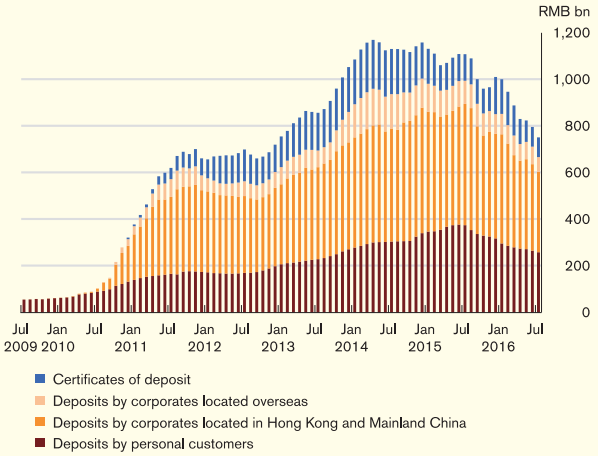


Sources: Bloomberg and Treasury Markets Association.

The renminbi liquidity pool in Hong Kong contracted further in the first half of 2016 as depreciation pressure continued to linger on the renminbi exchange rate. The total outstanding amount of renminbi customer deposits and certificates of deposit (CDs) declined by 21.2%

from six months earlier to RMB796.2 billion at the end of June (Chart 4.14 and Table 4.B). Within the total, renminbi customer deposits fell by 16.4% during the first half, with both personal and corporate deposits registering sharper declines. Over the same period, outstanding CDs dropped by 46.8% due to a fall in CD issuances and maturing of a relatively large amount of CDs.

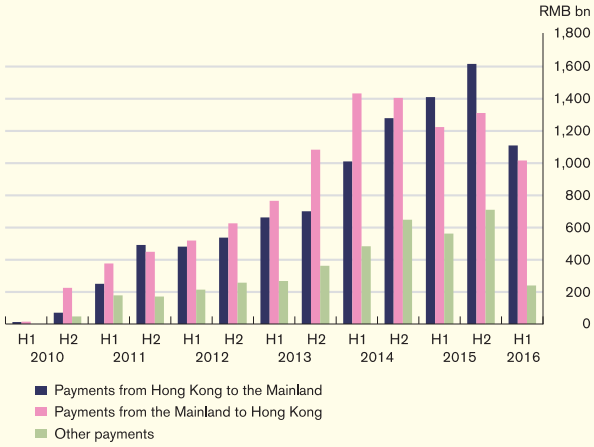
Chart 4.14
Renminbi deposits and CDs in Hong Kong



Source: HKMA.

Other aspects of the offshore renminbi banking business also softened. The amount of renminbi bank loans outstanding declined modestly by 3.4% to RMB287.3 billion at the end of June. Renminbi trade settlement handled by banks in Hong Kong also decreased to RMB2,365.2 billion in the first half of 2016, down 35.0% from the preceding half-year period (Chart 4.15 and Table 4.B). Among the total, outward trade remittances to Mainland China witnessed a sharper contraction than inward remittances to Hong Kong. That said, Hong Kong's position as a global hub for offshore renminbi clearing and settlement remained robust, with the average daily turnover of renminbi real time gross settlement system staying high at RMB869.0 billion in the first half.

Chart 4.15
Flows of renminbi trade settlement payments



Source: HKMA.

Development of the offshore renminbi business will continue to face headwinds from soft market expectations on the renminbi exchange rate. Once confidence in the Mainland economy improves, and as Mainland's capital account liberalisation process and the Belt and Road Strategy make new progress, such as the launch of the Shenzhen-Hong Kong Stock Connect, it is expected the offshore renminbi business will gather strength. The inclusion of the renminbi into the International Monetary Fund's (IMF) Special Drawing Rights (SDR) basket starting from October may also strengthen the demand for renminbi-denominated assets, thereby offering further support to the offshore renminbi business.

Table 4.B
Offshore renminbi banking statistics

	Dec 2015	Jun 2016
Renminbi deposits & certificates of deposit (CDs) (RMB bn)	1,010.4	796.2
Of which:		
Renminbi deposits (RMB bn)	851.1	711.5
Share of renminbi deposits in total deposits (%)	9.3	7.5
Renminbi certificates of deposit (CDs) (RMB bn)	159.3	84.7
Renminbi outstanding loans (RMB bn)	297.4	287.3
Number of participating banks in Hong Kong's renminbi clearing platform	217	213
Amount due to overseas banks (RMB bn)	105.7	93.3
Amount due from overseas banks (RMB bn)	132.1	135.4
	Jan – Jun 2016	
Renminbi trade settlement in Hong Kong (RMB bn)	2,365.2	
Of which:		
Inward remittances to Hong Kong (RMB bn)	1,016.0	
Outward remittances to Mainland China (RMB bn)	1,109.7	
Turnover in Hong Kong's RMB RTGS system (Daily average during the period; RMB bn)	869.0	

Source: HKMA.

Asset markets

Hong Kong equity market staged a rebound after the sharp correction in early 2016 on the back of solid gains in major stock markets, easing concerns about a global downturn, and increased expectation that major central banks would maintain or further relax their monetary policies. However, the market remains susceptible to changes in the external environment, in particular with respect to the pace of US monetary normalisation. The Hong Kong dollar debt market expanded markedly, while issuers scaled back issuance further in the offshore renminbi debt market. The residential property market has stabilised since the second quarter, but the outlook has become more uncertain in the face of the increase in new housing supply and the uncertain global financial environment.

4.3 Equity market

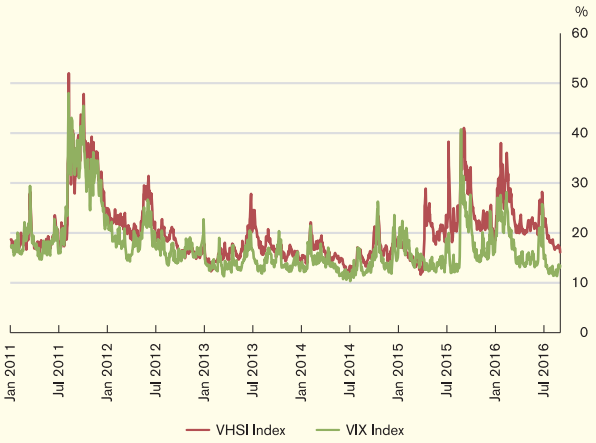
The Hong Kong equity market staged a rebound after falling to its lowest level in more than four years in February. Sentiment was boosted by the solid gains of the US and other major stock markets. In addition, the recovery of oil price from a 14-year low in early 2016 alleviated concerns about a severe slowdown of the global economy, thus lending support to all major markets, including Hong Kong. While the UK's referendum to leave the EU triggered a brief decline of the market in June, momentum resumed quickly amid expectation that the US Federal Reserve would be more gradual in its rate hikes and other central banks would further relax their monetary policies. With global interest rates staying at historical lows and government bond yields of some major advanced economies dipping into negative territories, investors regained their appetite for risky assets globally, which also benefited local equities.

Overall, the Hang Seng Index (HSI) and the Hang Seng China Enterprises Index (HSCEI), also known as the H-share index, increased by 20.2% and 20.5% respectively between March and August 2016 (Chart 4.16), with the option implied volatility of the HSI (VHSI) staying at a relatively low range of 10% to 30% (Chart 4.17).

Chart 4.16
Equity prices in Hong Kong

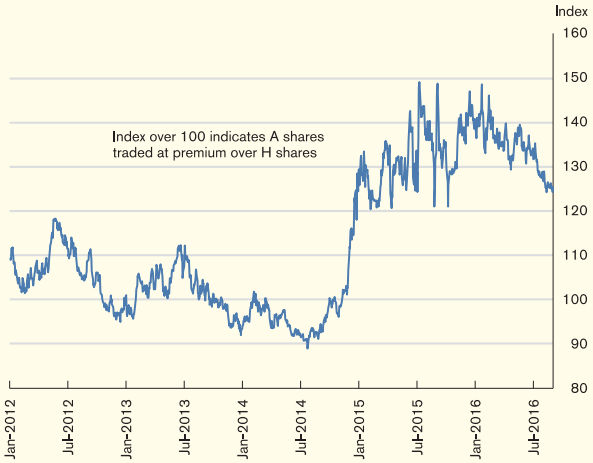
Source: Bloomberg.

Chart 4.17
Option-implied volatilities of the HSI and S&P 500



Source: Bloomberg.

Chart 4.18
Hang Seng China AH Premium Index

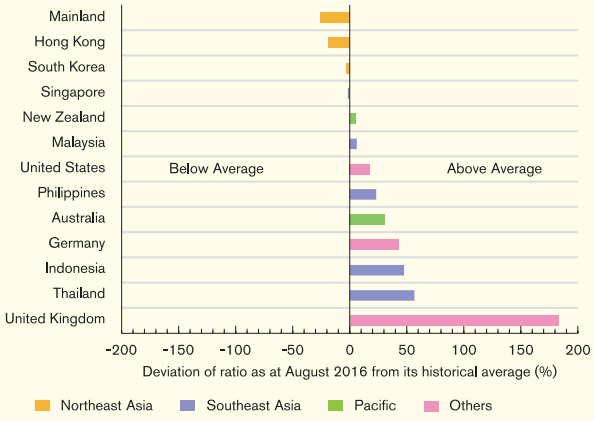


Source: Bloomberg.

The price discrepancy between stocks listed in the Mainland and Hong Kong markets, while remaining tangible, narrowed moderately during the review period. By the end of August, the Hang Seng China AH Premium Index had declined by around 8.5% from the level at end-February (Chart 4.18). The narrowing of the price discrepancy is attributable to a reduction of outlook uncertainties among investors in the two markets, as reflected by the recent decline of the option-implied volatility.[23]

Looking forward, the relatively attractive valuations of the Hong Kong market versus other markets in the region may render it more resilient to minor setbacks (Chart 4.19). Nonetheless, the market remains susceptible to unexpected changes in the external market conditions. In particular, uncertainties about the pace of US monetary normalisation and global economic growth prospects are likely to keep investors cautious.

Chart 4.19
Price-earnings ratios of Asia Pacific (excluding Japan) and other major markets



Sources: Bloomberg and HKMA staff estimates.

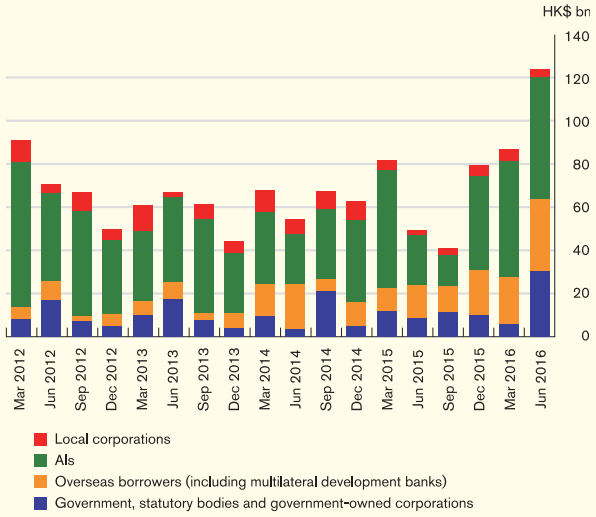
[23] See Chung, Hui and Li (2013) "Explaining share price disparity with parameter uncertainty: Evidence from Chinese A- and H-shares", *Journal of Banking and Finance*, 37 (2013) pp1073–1083.

4.4 Debt market

The Hong Kong dollar debt market expanded further in the first half of 2016 on the back of strong issuance by domestic and international borrowers. Total debt issuance registered a notable growth of 29.7% year on year to HK$1,510.0 billion. The public sector, the domestic private sector, and the overseas borrowers including MDBs saw their debt issuance increase by 26.8%, 40.9% and 112.2% respectively over the same period in 2015 (Chart 4.20). In particular, new debt issued by MDBs reached HK$2.8 billion in the second quarter, more than tripling the amount in the first quarter, reflecting an increase in the use of bonds for raising funds for their infrastructural investment.[24] Against this backdrop, Hong Kong has experienced bond fund inflows to the market since March after seven months of net fund outflows (Chart 4.21).

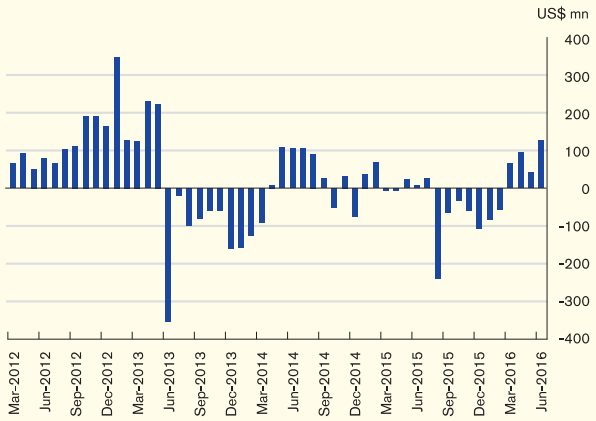
As a result of the significant increase in issuance, the total amount of Hong Kong dollar debt outstanding rose by 15.7% to a record high of HK$1,654.4 billion at the end of June 2016, which is equivalent to 28.0% of Hong Kong dollar M3 or 22.8% of Hong Kong dollar denominated assets of the entire banking sector (Chart 4.22). The Exchange Fund and overseas borrowers including MDBs contributed most to the increase, with their outstanding debt increasing by 21.2% and 19.5% to HK$912.4 billion and HK$183.8 billion respectively.

Chart 4.20
New issuance of non-Exchange Fund Bills and Notes Hong Kong dollar debt



Source: HKMA.

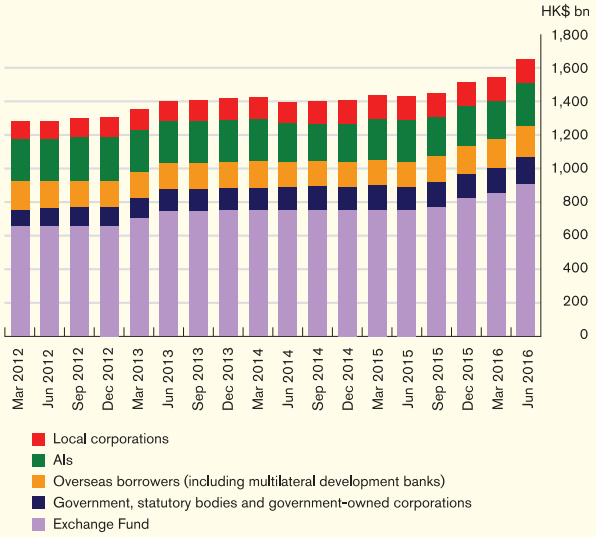
Chart 4.21
Bond fund flows into Hong Kong



Source: EPFR Global.

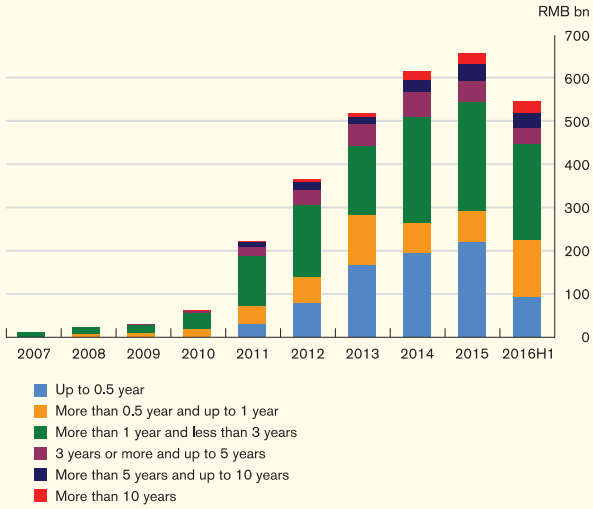
[24] The major MDBs issuing Hong Kong dollar denominated debt securities in the first half of 2016 include Asian Development Bank, International Finance Corporation (IFC), and International Bank for Reconstruction and Development. In view of increased cooperation between Hong Kong and MDBs, the recent increase may signify the beginning of a new trend. For instance, the IFC signed a Memorandum of Understanding with the HKMA on facilitating infrastructure financing on 4 July 2016.

Chart 4.22
Outstanding Hong Kong dollar debt



Source: HKMA.

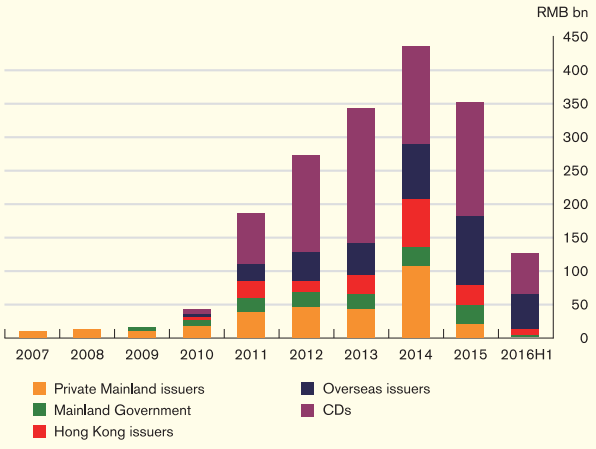
Chart 4.24
Outstanding amount of offshore renminbi debt securities by remaining tenor



Sources: Newswires and HKMA staff estimates.

Meanwhile, the offshore renminbi debt market in Hong Kong continued to shrink in part reflecting widespread concerns earlier this year about a global economic slowdown and the supply side reforms in Mainland China which may have discouraged corporates' plans for expansion, thus lowering their financing needs. In the first half of 2016, offshore renminbi debt issuance amounted to RMB126.9 billion, down by 29.4% year on year (Chart 4.23). As a result, the outstanding amount of the offshore renminbi debt securities decreased by 16.8% year on year to RMB549.2 billion at the end of June 2016 (Chart 4.24).

Chart 4.23
New Issuance of offshore renminbi debt securities



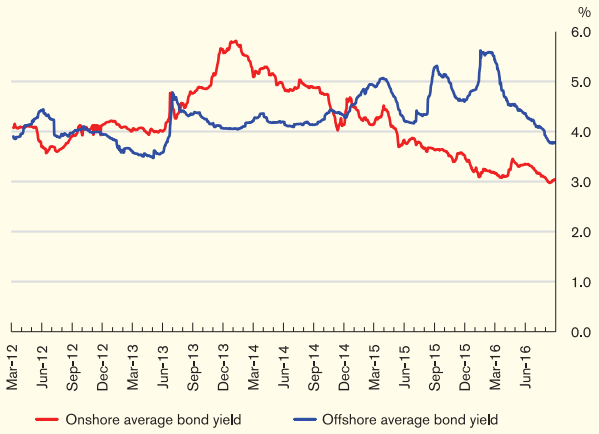
Sources: Newswires and HKMA staff estimates.

The decline in non-certificate-of-deposit (non-CD) debt issuance was across the board for all types of issuers. Mainland borrowers led retreat, down by 85.8% year on year to RMB3.6 billion in the first half of 2016. The slowdown is to a significant extent due to the weaker investor appetite for dim sum bonds amid renminbi weakness against the US dollar, as well as the lower borrowing costs in Mainland China (Chart 4.25). New regulations permitting more domestic and international participation in the onshore interbank bond market might have also encouraged more Mainland enterprises to tap the onshore bond market.[25] Overseas borrowers reduced their issuance at a more moderate pace. In the first half of 2016, their non-CD renminbi debt issuance totalled RMB52.5 billion, down by 18.7% year on year. Among overseas issuers, Australian borrowers accounted for 20.4% of the total

[25] For example, on 6 May 2016, the People's Bank of China (PBoC) announced that qualified institutional investors are allowed to enter the interbank bond market on a registration basis. Regarding international participation, the PBoC announced *Procedures for Foreign Central Banks and Similar Institutions to Enter China's Inter-bank Bond Market* on 14 April 2016. On 27 May 2016, the Shanghai head office of the PBoC and the State Administration of Foreign Exchange (SAFE) issued related implementing rules, allowing a wide range of foreign institutional investors to participate in the onshore interbank bond market.

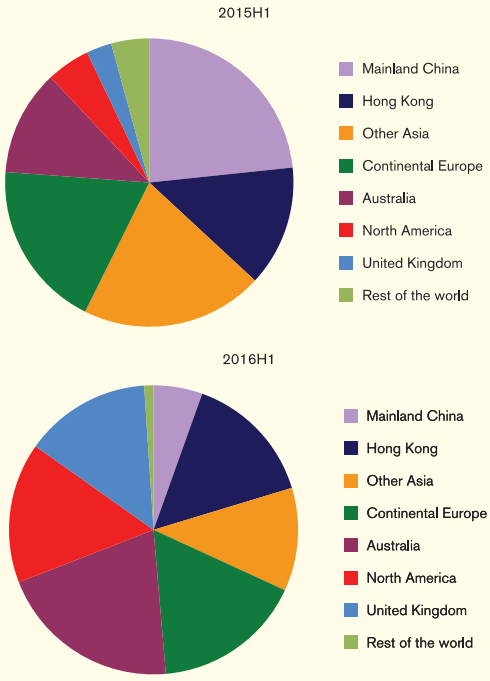
issuance in the first half of 2016, compared to the 11.8% in the same period of 2015 (Chart 4.26). Borrowers from the UK and North America also saw their shares of issuance increase significantly.

Chart 4.25
Average yields of onshore vs. offshore renminbi bond indices



Sources: Bloomberg, Hang Seng Indexes Company Ltd, and China Central Depository & Clearing Co., Ltd.

Chart 4.26
New issuance of non-CD offshore renminbi debts by country of operation



Sources: Newswires and HKMA staff estimates.

Looking ahead, the outlook for the near-term development of the offshore renminbi debt market remains uncertain. On the supply side, despite the tangible refinancing pressure for offshore renminbi borrowers in the coming year, the lower borrowing costs onshore would likely continue to be a major factor affecting Mainland enterprises' decision to issue renminbi debt in the offshore market. Meanwhile, the opening-up of the Mainland bond market to overseas issuers and investors may present an alternative source of renminbi financing. On the demand side, US dollar based investors' incentive to hold dim sum bonds may reduce due to the recent weakness of renminbi vis-à-vis the US dollar. However, while the recent trend is unlikely to reverse any time soon, the inclusion of the renminbi in the IMF's SDR basket in October this year may boost the demand for renminbi-denominated assets in the longer term, creating an environment more conducive to the development of the market.

4.5 Property markets

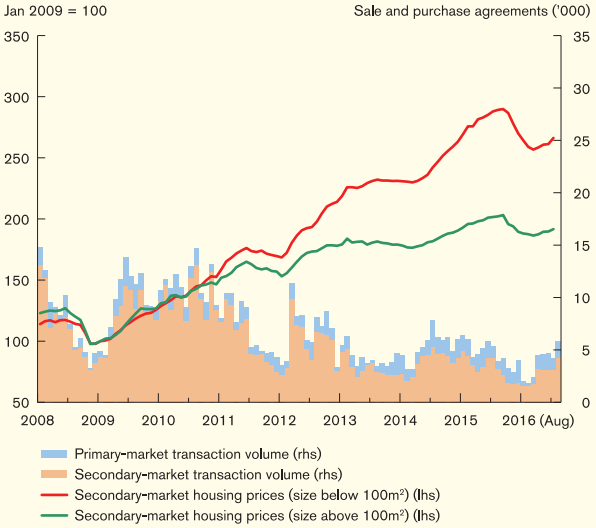
Residential property market

The residential property market has stabilised since the second quarter. Amid improvement in market sentiment and increased new launches in the primary market, the average monthly transactions bounced up to 4,567 in the second quarter, and 5,032 in July and August (Chart 4.27). In particular, secondary-market transactions recovered from the record low level in February, while primary market sales increased sharply on the back of property developers' aggressive promotional schemes to lure buyers, including the offering of mortgage plans with very high loan-to-value (LTV) ratios and interest and repayment holidays.[26]

[26] In this regard, potential buyers should take into account any changes that may occur in the future, carefully assessing their repayment ability and making a shrewd and prudent decision. For more details, see the inSight article on "Mortgage Loans with High Loan-to-Value Ratios offered by Property Developers" published by the HKMA on 20 June 2016.

Housing prices have picked up since the second quarter along with the recovery in the transaction volume. Secondary-market housing prices have risen by 3.7% in April–July after falling by 11.3% between September 2015 and March this year (Chart 4.27). Prices of small and medium-sized flats (with saleable area of less than 100m^2) increased faster than the prices of large flats (with saleable area of at least 100m^2) in recent months. While the price premium of primary market flats relative to secondary market flats has narrowed, property developers have raised selling prices and reduced discounts more recently amid improved market sentiment. Recent market data also indicated that secondary market housing prices continued to rise during the third quarter.

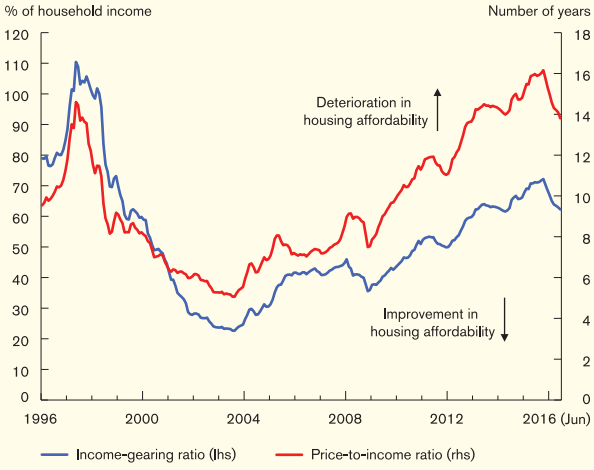
Chart 4.27
Residential property prices and transaction volume



Sources: R&VD and Land Registry.

Housing affordability remained stretched, with the housing price-to-income ratio stayed high at 14.0 in the second quarter, close to the 1997 peak of 14.6. Moreover, the income-gearing ratio was 62.9% in the second quarter, well above the long-term average of about 50% (Chart 4.28).[27] As the cumulative decline in housing rentals was smaller than the decrease in housing prices from its peak last September, the buy-rent gap remained close to its recent high (Chart 4.29)[28], while residential rental yields continued to stay low at 2.2-3.0%.

Chart 4.28
Indicators of housing affordability

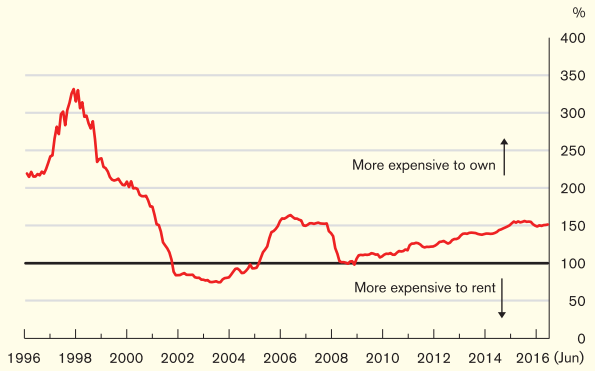


Sources: R&VD, C&SD and HKMA staff estimates.

[27] The price-to-income ratio measures the average price of a typical 50m^2 flat relative to the median income of households living in private housing. Alternately, the income-gearing ratio compares the amount of mortgage payment for a typical 50m^2 flat (under a 20-year mortgage scheme with a 70% LTV ratio) to the median income of households living in private housing. The income-gearing ratio is not the same as a borrower's actual debt-servicing ratio, which is subject to a maximum cap by the HKMA prudential measures.

[28] The buy-rent gap estimates the cost of owner-occupied housing (under a 20-year mortgage scheme with a 70% LTV ratio) relative to rentals.

Chart 4.29
Buy-rent gap



Note: This indicator is calculated as the ratio of the cost of purchasing and maintaining a 50m² flat with that of renting it.
Sources: R&VD, C&SD and HKMA staff estimates.

Mortgage interest rates continued to stay low, with a number of major banks lowering their mortgage rates further in recent months amid increased competition for mortgage business. However, the eventual rise in US interest rates would bring upward pressures on mortgage rates and hence debt-serving burdens. That said, banks in Hong Kong have sufficient buffer to withstand risks stemming from the property market. Reflecting the effectiveness of the macro-prudential measures implemented by the HKMA since 2009, the average LTV ratio for new mortgages declined to 53.3% in July from 64% before the measures were introduced, and the debt-servicing ratio also fell by about 6 percentage points to 33.8%.

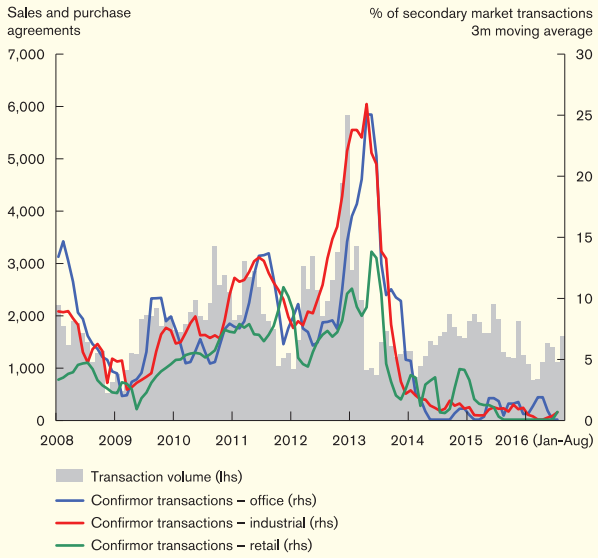
The residential property market outlook has become more uncertain. On one hand, while market expectation of still-abundant global liquidity could provide some support to the housing market, the uncertainty surrounding the pace and effect of US rate hike will continue to pose headwinds. On the other hand, rising housing completion will shrink the housing supply-demand gap and exert pressure on property developers to speed up their sales. Slower domestic growth and uncertainty from the evolving Brexit development could also dampen market sentiment and pose downside risks to the property market.

Non-residential property market

Despite signs of stabilisation, the non-residential property market remained soft in the first half of 2016 amid financial market volatility and challenges facing the retail sector. Transaction volume declined by 20% to a monthly average of 1,171 in the first eight months, as market activities slowed in the first quarter before picking up in the second quarter (Chart 4.30). Speculative activities remained subdued, as indicated by the low levels of confirmor transactions. Meanwhile, prices of office space, retail premises and flatted factories have declined by around 3.7% to 7.7% in the year to July (Chart 4.31). On the other hand, rentals of office space and flatted factories saw a modest increase compared with the end of 2015, while rentals of retail space dropped. The overall rental yields across segments continued to stay low at 2.6-3.3%.

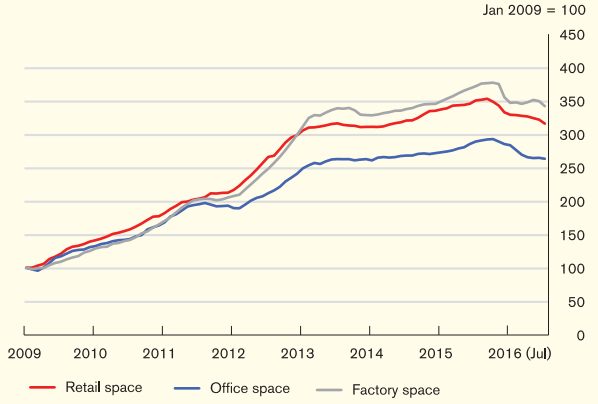
Looking ahead, the non-residential property market would on one hand be supported by the expectation of low US interest rates for longer period, while on the other hand dragged by heightened uncertainty in the global financial environment after Brexit and slower domestic economic growth. Across different market segments, while office vacancy rates stayed low and the demand from Mainland-related companies for office space at prime locations appeared to be robust, the uncertain business outlook does not bode well for the segment. Meanwhile, the end of revitalisation measures for older industrial buildings may slow market transactions of flatted factories, while prolonged weakness in the retail sector may continue to exert downward pressure on retail rentals, particularly at prime locations.

Chart 4.30
Transactions in non-residential properties



Sources: Land Registry and Centaline Property Agency Limited.

Chart 4.31
Non-residential property price indices



Source: R&VD.

5. Banking sector performance

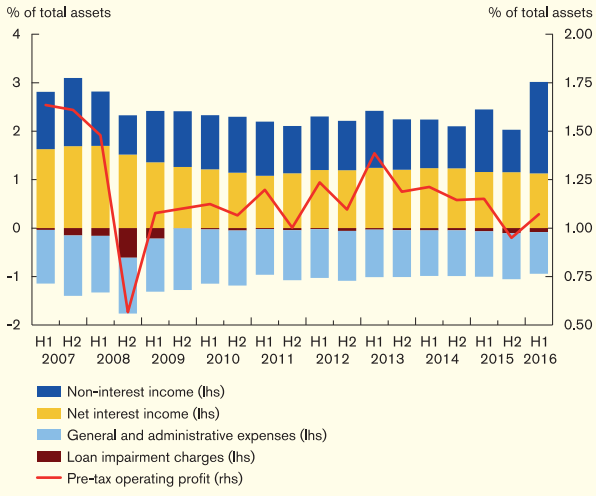
The profitability of retail banks improved in the first half of 2016 as compared to the second half of 2015. This was mainly due to lower operating costs. Capital and liquidity conditions were structurally robust. Asset quality remained sound by historical standards despite marginal deterioration during the review period. Looking ahead, the subdued demand for credit, depressed yields of safe assets and keen competition in the mortgage market could pose challenges for banks in managing their surplus funding, creating headwinds for their profitability. Meanwhile, in view of rising leverage of non-local corporates, the credit risk in relation to banks' corporate exposure would be expected to increase further as the US interest rate hike resumes. The Hong Kong banking system has not been much affected by the Brexit vote. However, given the unmatched role of the United Kingdom banking system in distributing international banking flows and the significant interbank linkage between Hong Kong and the United Kingdom, continued monitoring of potential international spillover risks is required.

5.1 Profitability and capitalisation

Profitability

The profitability of retail banks[29] improved with increased pre-tax operating profits of 14.9% in the first half of 2016 as compared with the second half of 2015. The improvement was largely due to lower operating costs. As a result, the return on assets[30] of retail banks rebounded from 0.95% in the second half of 2015 to 1.07% in the first half of 2016 (i.e. the red line in Chart 5.1).

Chart 5.1
Profitability of retail banks



Note: Semi-annually annualised figures.

* The sharp rise in non-interest income in 2016H1 was largely due to a one-off increase in non-trading investment income.

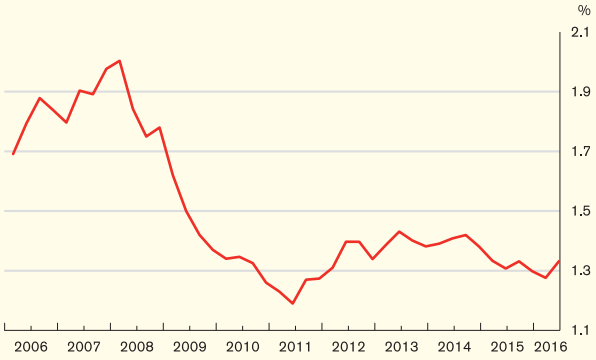
Source: HKMA.

[29] Throughout this chapter, figures for the banking sector relate to Hong Kong offices only, except where otherwise stated.

[30] Return on assets is calculated based on aggregate pre-tax operating profits.

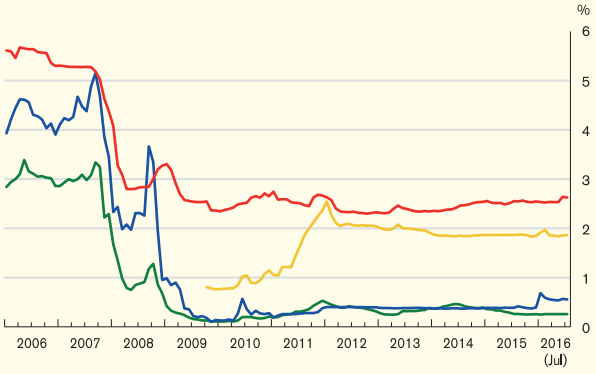
The net interest margin (NIM) of retail banks edged up to 1.33% in the second quarter of 2016 from 1.30% in the fourth quarter of 2015 (Chart 5.2), which was partly supported by a slight rise in mortgage rates. The best lending rate-based mortgage rate rose by 9 basis points during the first half of 2016, while the HIBOR-based mortgage rate stayed broadly stable (Chart 5.3).

Chart 5.2
Net interest margin of retail banks



Note: Quarterly annualised figures.
Source: HKMA.

Chart 5.3
Interest rates



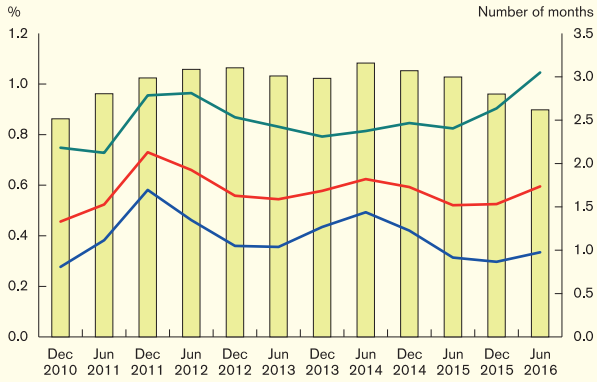
Composite interest rate (a)
3-month HIBOR (a)
Average mortgage rate for BLR-based mortgages (b)
Average mortgage rate for HIBOR-based mortgages (b)

Notes:
(a) End of period figures.
(b) Period-average figures for newly approved loans.
Sources: HKMA and staff estimates.

The US interest rate hike in December 2015 has so far had only a limited impact on banks' overall funding costs. The composite interest rate, a measure of the average cost of Hong Kong dollar funds for retail banks, stayed low at 0.26% during the first half of 2016.

Nevertheless, the wholesale funding market may have begun to reflect the impact partially. For instance, there was short-lived volatility in Hong Kong interbank interest rates (HIBORs) in the first two months of 2016 (i.e. the blue line in Chart 5.3). Market-based Hong Kong and US dollar funding cost[31] for licensed banks as a whole also increased, leading to an increase in their overall funding costs by 6 basis points during the first half of 2016 (Chart 5.4).

Chart 5.4
Hong Kong and US dollar funding cost and maturity of licensed banks



Source: HKMA.

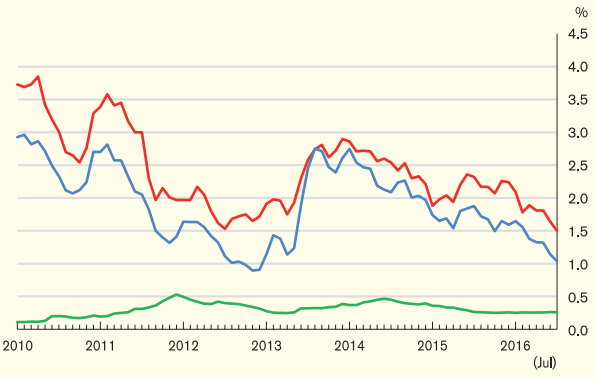
Looking ahead, the less-favourable external environment could create headwinds for Hong Kong banks' profitability, particularly for their investment portfolios. Specifically, the negative interest rate environment in some advanced economies, together with possible flight-to-safety in response to the Brexit vote, may fuel further

[31] Market-based funding cost is measured by the interest costs of banks' non-deposit interest-bearing liabilities.

demand for safe assets that banks generally hold (Chart 5.5), implying that surplus funds deployed in these safe assets would earn much thinner returns than before.

Indeed, anecdotal evidence suggests that depressed yields of safe assets may have a broader implication. In particular, the thinner investment returns from safe assets may be one contributing factor to the fiercer competition in the mortgage market, which could put further pressure on Hong Kong banks' profitability.

Chart 5.5
Interest margin of safe assets

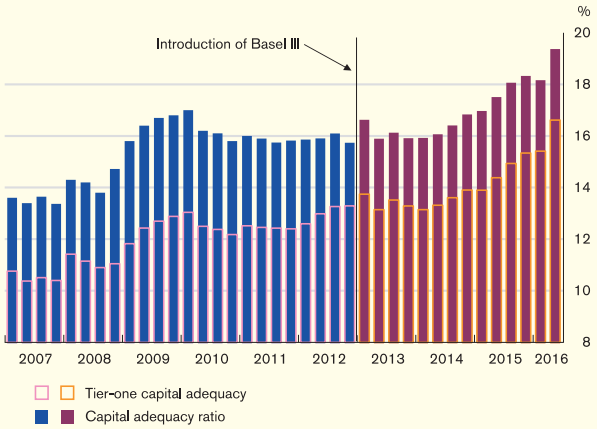


Notes:
(a) Period-average figures.
(b) End of period figures.
Sources: Bloomberg and HKMA.

Capitalisation

Capitalisation of the banking sector continued to be strong and well above the minimum international standards. The consolidated capital adequacy ratio of locally incorporated AIs increased to 19.4% at the end of June 2016 (Chart 5.6), while the tier-one capital adequacy ratio[32] also rose to 16.6%.

Chart 5.6
Capitalisation of locally incorporated AIs



Notes:
1. Consolidated positions.
2. With effect from 1 January 2013, a revised capital adequacy framework (Basel III) was introduced for locally incorporated AIs. The capital adequacy ratios from March 2013 onwards are therefore not directly comparable with those up to December 2012.

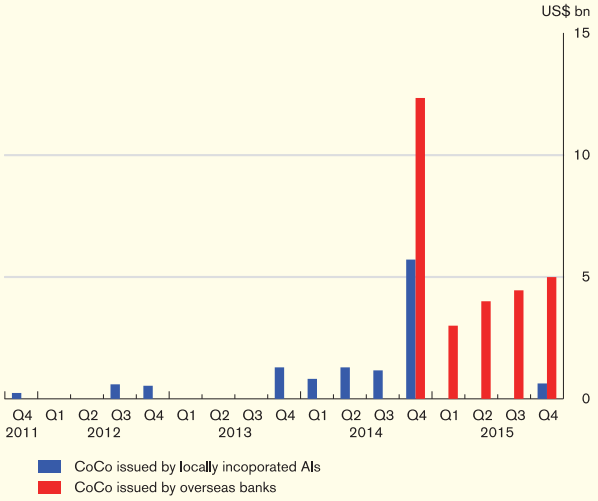
Source: HKMA.

Issuing contingent convertible bonds (CoCos)[33] has become more popular among banks to strengthen their Additional Tier 1 and Tier 2 capital levels under the Basel III framework. In Hong Kong, the CoCo market was quiet until it registered a notable surge in 2014. From the fourth quarter of 2011 to the end of 2015, the cumulative issuance of CoCos by locally incorporated AIs was US$12.3 billion (i.e. the sum of blue bars in Chart 5.7). The rapid increase in the issuance of CoCos was primarily driven by banks' need to replace certain capital instruments that will be phased out under the Basel III framework. The growth of issuance, however, slowed in 2015 for locally incorporated AIs, probably reflecting that many of them have broadly completed their replacement processes.

[32] The ratio of tier-one capital to total risk-weighted assets.

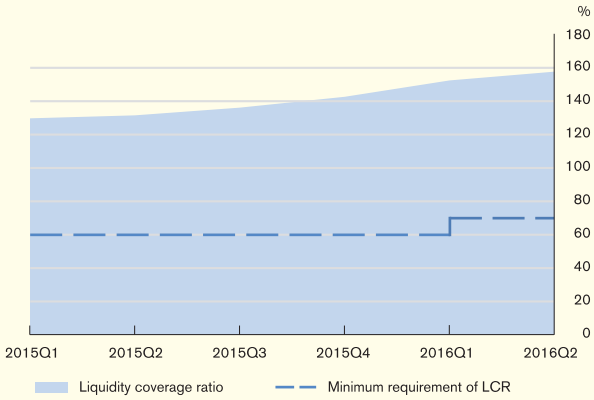
[33] CoCos are loss-absorbing debt instruments that can be converted into equity or written off upon a pre-specified trigger event. The intended role of CoCos is to provide a source of private capital when issuing banks are unlikely to be able to raise capital in times of market distress.

Chart 5.7
CoCos issuance in Hong Kong



Sources: Banks' websites and Dealogic.

Chart 5.8
Liquidity coverage ratio



Source: HKMA.

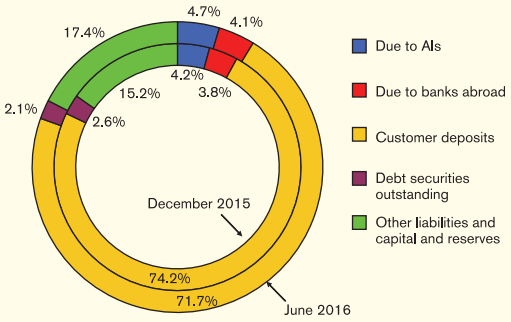
5.2 *Liquidity and interest rate risks*

Liquidity and funding

The liquidity position of the banking sector, as measured by the Basel III Liquidity Coverage Ratio (LCR)[34] requirement, remained favourable and strengthened further during the review period. The average LCR of category 1 institutions rose to 158.0% in the second quarter of 2016 from 142.9% in the last quarter of 2015 (Chart 5.8). Meanwhile, the average Liquidity Maintenance Ratio (LMR) of category 2 institutions remained steady at 53.8%. Both ratios remained well above their respective regulatory minimums,[35] suggesting that the Hong Kong banking sector is able to withstand potential liquidity shocks arising from possible capital outflows from Hong Kong.

Customer deposits continued to be the primary funding source for retail banks, although the share of customer deposits to banks' total liabilities declined marginally to 71.7% at the end of June 2016, from 74.2% at the end of December 2015 (Chart 5.9).

Chart 5.9
The liability structure of retail banks



Notes:
1. Figures may not add up to total due to rounding.
2. Figures refer to the percentage of total liabilities (including capital and reserves).
3. Debt securities comprise negotiable certificates of deposit and all other negotiable debt instruments.

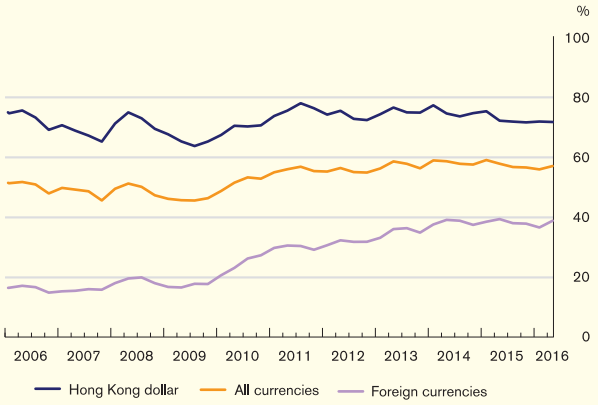
Source: HKMA.

[34] The Basel III LCR requirement, phased-in from 1 January 2015, is designed to ensure that banks have sufficient high-quality liquid assets to survive a significant stress scenario lasting 30 calendar days. In Hong Kong, AIs designated as category 1 institutions adopt the LCR; while category 2 institutions adopt the LMR, which is a modified form of the original statutory liquidity ratio requirement.

[35] For a category 1 institution, the minimum requirement for LCR began at 60% on 1 January 2015, rising in equal annual steps of 10 percentage points to reach 100% on 1 January 2019. A category 2 institution must maintain an LMR of not less than 25% on average in each calendar month.

Due to a relatively faster growth of loans than deposits for the retail banks during the review period, the Hong Kong dollar loan-to-deposit (LTD) ratio of retail banks edged up by 0.2 percentage points to 71.7% at the end of June (Chart 5.10), while the foreign currency LTD ratio also increased by 1 percentage point to 38.8%. As a whole, the all-currency LTD ratio increased moderately to 57.0% at the end of June from 56.5% six months earlier.

Chart 5.10
Average loan-to-deposit ratios of retail banks



Source: HKMA

Interest rate risk

Interest rate risk exposure of locally incorporated licensed banks remained low. It is estimated that, under a hypothetical shock of an across-the-board, 200-basis-point increase in interest rates, the economic value of locally incorporated licensed banks' interest rate positions[36] could be subject to a decline equivalent to 3.62%[37] of their total capital base as of June. Nevertheless, as the uncertainty about the pace and timing of US interest rate rises remains, banks should pay close attention to their interest rate risk management.

[36] Locally incorporated AIs subject to the market risk capital adequacy regime are required to report positions in the banking book only. Other locally incorporated AIs exempted from the market risk capital adequacy regime are required to report aggregate positions in the banking book and trading book.

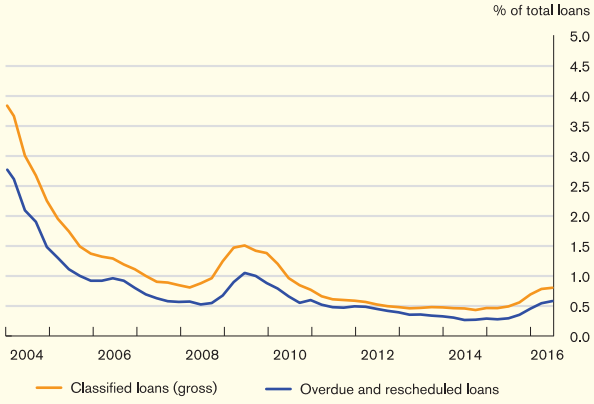
[37] The estimated level of impact reported here is not strictly comparable to that published in previous issues of this report due to different coverage of banks.

5.3 Credit risk

Overview

The asset quality of retail banks remained healthy by historical standards despite marginal deterioration during the review period. The classified loan ratio increased to 0.80% at the end of June from 0.69% at the end of 2015, and the ratio of overdue and rescheduled loans rose to 0.58% from 0.45% (Chart 5.11).

Chart 5.11
Asset quality of retail banks



Notes:
1. Classified loans are those loans graded as "sub-standard", "doubtful" or "loss".
2. Figures prior to December 2015 are related to retail banks' Hong Kong offices and overseas branches. Starting from December 2015, the coverage was expanded to include the banks' major overseas subsidiaries as well.

Source: HKMA.

Credit growth is expected to be sluggish as results of the HKMA Opinion Survey on Credit Condition Outlook of June 2016 show that the share of surveyed AIs expecting a lower loan demand in the next three months increased notably to 38% (Table 5.A).

Table 5.A
Expectation of loan demand in the next three months

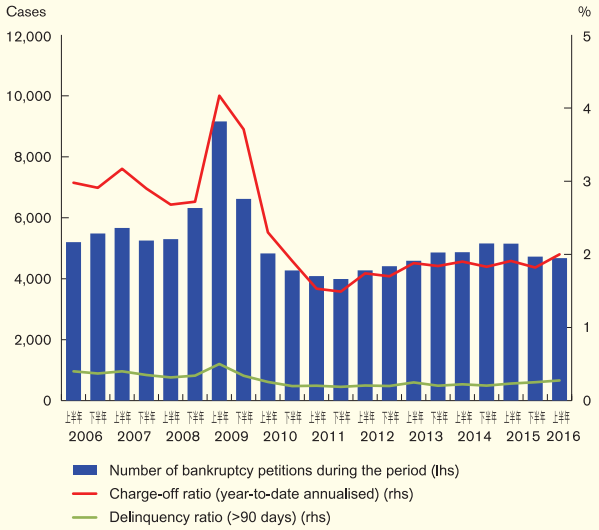
% of total respondents	Sep-15	Dec-15	Mar-16	Jun-16
Considerably higher	0	0	0	0
Somewhat higher	0	0	0	0
Same	86	86	71	62
Somewhat lower	14	14	29	38
Considerably lower	0	0	0	0
Total	100	100	100	100

Source: HKMA.

Household exposure[38]

The credit risk of unsecured household exposure deteriorated moderately, with both the annualised credit card charge-off ratio and the delinquency ratio rising to 2.00% and 0.27% respectively in the first half of 2016 (Chart 5.12). Nevertheless, both ratios remained low by historical standards, suggesting the credit risk of unsecured household loans remained contained.

Chart 5.12
Charge-off ratio and delinquency ratio for credit card lending and bankruptcy petitions

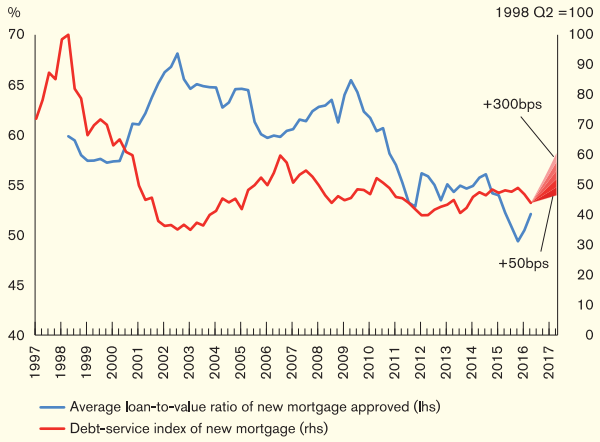


Sources: Official Receiver's Office and the HKMA.

Banks' mortgage portfolios remained healthy with the delinquency ratio staying low at 0.04% at the end of June. Reflecting the policy effect of macro-prudential measures by the HKMA since 2009, the average loan-to-value ratio of new mortgage loans approved has stayed low at 52.1% in the second quarter compared to 64% immediately before the implementation of tightening measures in September 2009.

Meanwhile, the debt-service index of new mortgages[39] improved to 44.0 in the second quarter from 49.0 in the fourth quarter of 2015 (i.e. the red line in Chart 5.13), mainly reflecting a lower average size of new mortgage loans (Chart 5.14). However, the household debt-servicing burden could increase drastically if US interest rate normalisation resumes, as a sensitivity test suggests that the index could rise significantly to 60.6 in a four-quarter period if interest rates were to increase by 300 basis points[40] other things being constant. Banks should stay alert to the risks associated with a rising household debt-servicing burden.

Chart 5.13
Average loan-to-value ratio and household debt-servicing burden in respect of new mortgages



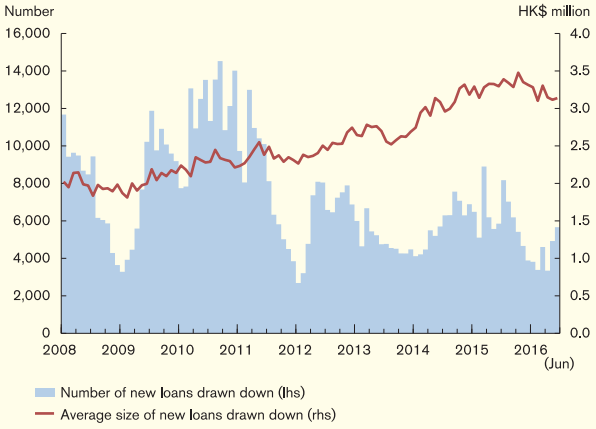
Note: The calculation of the index is based on the average interest rate for BLR-based mortgages.
Sources: HKMA and staff estimates.

[38] Loans to households constitute lending to professional and private individuals, excluding lending for other business purposes. Mortgage lending accounts for a major proportion of household loans while the remainder comprises mainly unsecured lending through credit card lending and other personal loans for private purposes. At the end of June 2016, the share of household lending in domestic lending was 29.6%.

[39] A higher value of the debt-service index indicates that there is either a drop in household income, or an increase in interest rates, or an increase in the average mortgage loan amount drawn by households. Historical movements in the index suggest that a sharp rise in the index may lead to deterioration in the asset quality of household debt.

[40] The assumption of a 300-basis-point rise in interest rates is consistent with the prudential measure that requires AIs to have a 3-percentage-point mortgage rate upward adjustment for stress testing property mortgage loan applicants' debt servicing ability.

Chart 5.14
New mortgage loans of surveyed AIs



Source: HKMA Residential Mortgage Survey.

Corporate exposure[41]

Box 4 provides a comprehensive assessment on corporate leverage in Hong Kong based on different indicators from various data sources. Overall, the assessment supports the view that non-local corporates have played a bigger role in driving up the aggregate corporate leverage in Hong Kong after the global financial crisis and that some of these non-local corporates in Hong Kong may face significant debt-servicing problems when the US interest rate rises resume.

Looking forward, if the business environment deteriorates further, some non-local corporates' earnings could be hit harder and quicker, putting their debt-servicing ability under significant pressure. Meanwhile, local corporates may be indirectly affected by this unfavourable economic environment. Therefore, banks should assess how the possible deterioration of the external economic environment could have an impact on the asset quality of their corporate exposure.

Corporates' currency mismatches are another key factor that warrants close monitoring. The prolonged low interest rate environment may have encouraged corporates to take on excessive foreign exchange exposure without regard to the possible impact on the currency mismatch between their assets and liabilities.[42] Such currency mismatch could translate into significant losses and thus increase their default risk if exchange rates move unfavourably. Banks should remain cautious to corporates' currency mismatch risk.

Mainland-related lending and non-bank exposures

The banking sector's Mainland-related lending resumed positive growth during the review period. Total Mainland-related lending rose by 3.4% to HK$3,443 billion (15.6% of total assets) at the end of June 2016 from HK$3,331 billion (15.5% of total assets) at the end of 2015 (Table 5.B).

Other non-bank exposures also increased by 7.5% to HK$1,110 billion (Table 5.C).

Table 5.B
Mainland-related lending

HK$ bn	Sep 2015	Dec 2015	Mar 2016	Jun 2016
Mainland-related loans	3,377	3,331	3,342	3,443
Mainland-related loans excluding trade finance	3,061	3,055	3,042	3,138
Trade finance	316	276	300	305
By type of AIs:				
Overseas-incorporated AIs	1,448	1,437	1,439	1,492
Locally-incorporated AIs*	1,380	1,358	1,363	1,413
Mainland banking subsidiaries of locally-incorporated AIs	549	536	540	538
By type of borrowers:				
Mainland state-owned entities	1,419	1,398	1,400	1,422
Mainland private entities	674	658	685	718
Non-Mainland entities	1,284	1,275	1,257	1,304

Notes:
1. * Including loans booked in Mainland branches of locally-incorporated AIs.
2. Figures may not add up to total due to rounding.

Source: HKMA.

41 Excluding interbank exposure. At the end of June, the share of corporate loans in domestic lending was 70.2%.

42 Under the Linked Exchange Rate System, Hong Kong dollars and US dollars are regarded as the same currency in the context of foreign exchange risk. For example, a company that earns mainly Hong Kong dollar-denominated revenues and is funded by US dollar-denominated debt is not regarded as having foreign exchange risks as a result.

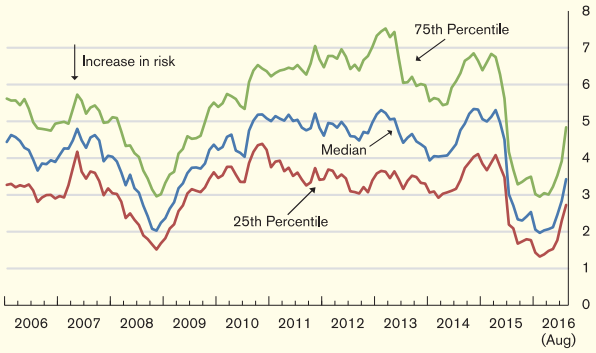
Table 5.C
Other non-bank exposures

HK$ bn	Sep 2015	Dec 2015	Mar 2016	Jun 2016
Negotiable debt instruments and other on-balance sheet exposures	668	647	647	685
Off-balance sheet exposures	406	386	413	425
Total	**1,073**	**1,033**	**1,060**	**1,110**

Note: Figures may not add up to total due to rounding.
Source: HKMA.

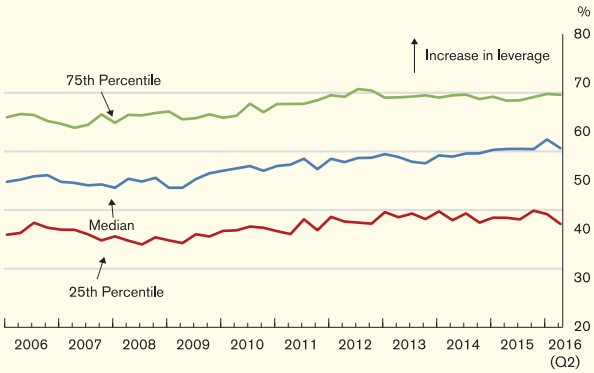
The distance-to-default index,[43] a market-based default risk indicator, points to a broad-based improvement in the default risk of the Mainland corporate sector since February (Chart 5.15). The decrease in default risk for the Mainland corporate sector is consistent with the improvement in the leverage ratio of the Mainland corporate sector (Chart 5.16).

Chart 5.15
Distance-to-default index for the Mainland corporate sector



Note: Distance-to-default index is calculated based on the non-financial constituent companies (i.e. excluding investment companies and those engaged in banking, insurance and finance) of the Shanghai Stock Exchange 180 A-share index.
Source: HKMA staff estimates.

Chart 5.16
Leverage ratio for the Mainland corporate sector

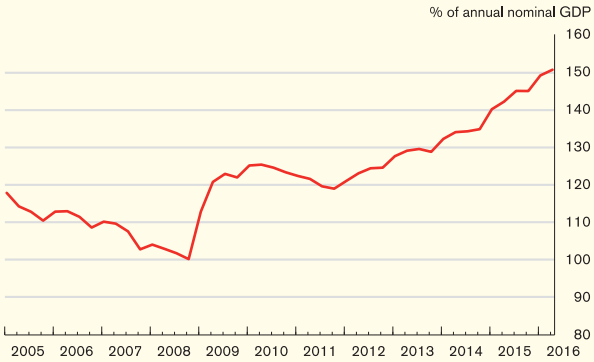


Notes:
1. The leverage ratio is defined as the ratio of total liabilities to total assets.
2. It is calculated based on the non-financial constituent companies (i.e. excluding investment companies and those engaged in banking, insurance and finance) of the Shanghai Stock Exchange 180 A-share index.

Source: HKMA staff estimates based on data from Bloomberg.

However, the classified loan ratio of Mainland-related lending of retail banks[44] increased to 0.92% at the end of June 2016 from 0.78% at the end of December 2015. In view of possible further slowdown of the Mainland economy and the risk of excessive credit, as revealed from the rising trend of the credit-to-GDP ratio (Chart 5.17), banks should remain attentive to the credit risk management of their Mainland-related lending.

Chart 5.17
Credit-to-GDP ratio in Mainland China



Note: Credit-to-GDP ratio is defined as the ratio of total bank loans (all currencies) to the sum of quarterly nominal GDP for the latest four quarters.
Sources: CEIC and HKMA staff estimates.

[43] The distance-to-default is a market-based default risk indicator based on the framework by R. Merton (1974), "On the pricing of corporate debt: the risk structure of interest rates", *Journal of Finance*, Vol. 29, pages 449-470, in which equity prices, equity volatility, and companies' financial liabilities are the determinants of default risk. In essence, it measures the difference between the asset value of a firm and a default threshold in terms of the firm's asset volatility.

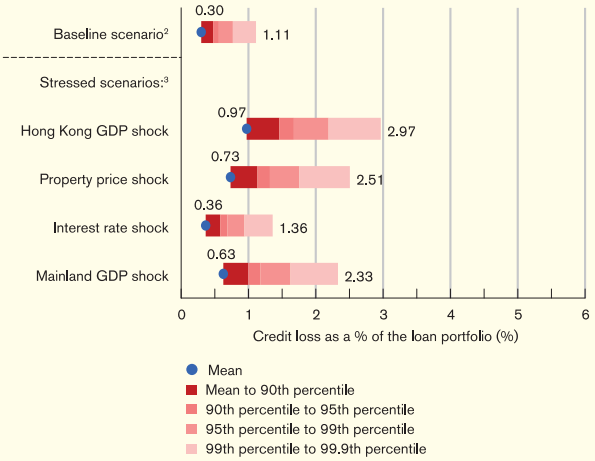
[44] Figures covered retail banks' Hong Kong offices, Mainland branches and subsidiaries.

Macro stress testing of credit risk[45]

Results of the latest macro stress testing on retail banks' credit exposure suggest that the Hong Kong banking sector remains resilient and should be able to withstand rather severe macroeconomic shocks, similar to those experienced during the Asian financial crisis. Chart 5.18 presents the simulated future credit loss rate of retail banks in the second quarter of 2018 under four specific macroeconomic shocks[46] using information up to the second quarter of 2016.

Taking account of tail risk, banks' credit losses (at the confidence level of 99.9%) under the stress scenarios range from 1.36% (Interest rate shock) to 2.97% (Hong Kong GDP shock), which are significant, but smaller than the estimated loan loss of 4.39% following the Asian financial crisis.

Chart 5.18
The mean and value-at-risk statistics of simulated credit loss distributions[1]



Notes:
1. The assessments assume the economic conditions in 2016 Q2 as the current environment. The Monte Carlo simulation method is adopted to generate the credit loss distribution for each scenario.
2. Baseline scenario: no shock throughout the two-year period.
3. Stressed scenarios:
   Hong Kong GDP shock: reductions in Hong Kong's real GDP by 2.3%, 2.8%, 1.6%, and 1.5% respectively in each of the four consecutive quarters starting from 2016 Q3 to 2017 Q2.
   Property price shock: Reductions in Hong Kong's real property prices by 4.4%, 14.5%, 10.8%, and 16.9% respectively in each of the four consecutive quarters starting from 2016 Q3 to 2017 Q2.
   Interest rate shock: A rise in real interest rates (HIBORs) by 300 basis points in the first quarter (i.e. 2016 Q3), followed by no change in the second and third quarters and another rise of 300 basis points in the fourth quarter (i.e. 2017 Q2).
   Mainland GDP shock: Slowdown in the year-on-year annual real GDP growth rate to 4% in one year.

Source: HKMA staff estimates.

5.4 Systemic risk

The potential impact from Brexit

Although the outcome of the Brexit referendum led to a significant instant impact on the global stock and foreign exchange markets, the global banking system has remained broadly intact so far.

In particular, while some individual European banks saw a significant drop in their stock prices right after the referendum, this negative stock market response has not translated into a notable increase in counterparty and liquidity risks that could systemically undermine the functioning of the global banking system. For instance, in the short-term US dollar funding market, the spread between the three-month US dollar London Interbank Offered Rate (LIBOR) and its corresponding overnight index swap (OIS) rate[47], which is a common indicator of systemic liquidity risks, only widened slightly to around 40 basis points after the referendum (Chart 5.19).[48]

45 Macro stress testing refers to a range of techniques used to assess the vulnerability of a financial system to "exceptional but plausible" macroeconomic shocks. The credit loss estimates presented in this report are obtained based on a revised framework from J. Wong et al. (2006), "A framework for stress testing banks' credit risk", *Journal of Risk Model Validation*, Vol. 2(1), pages 3-23. All estimates in the current report are not strictly comparable to those estimates from previous reports.

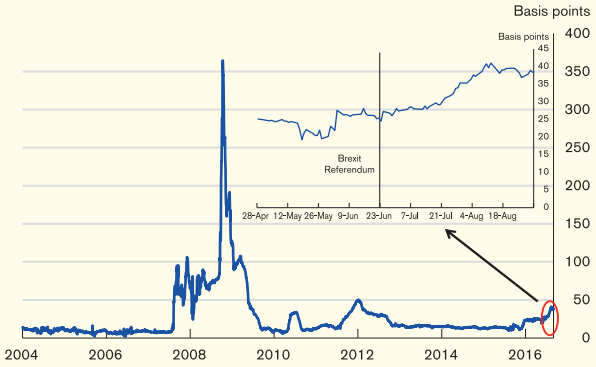
46 These shocks are calibrated to be similar to those that occurred during the Asian financial crisis, except the Mainland GDP shock.

47 An OIS is an interest rate swap in which the floating leg is linked to an index of daily overnight rates. The two parties agree to exchange at maturity, on an agreed notional amount, the difference between interest accrued at the agreed fixed rate and interest accrued at the floating index rate over the life of the swap. The fixed rate is a proxy for expected future overnight interest rates. As overnight lending generally bears lower credit and liquidity risks, the credit risk and liquidity risk premiums contained in the OIS rates should be small. Therefore, the LIBOR-OIS spread generally reflects the credit and liquidity risks in the interbank market.

48 Anecdotal evidence suggests that the widened LIBOR-OIS spread is partially attributable to the upward pressure on LIBORs associated with the build-up of liquidity buffers by some US prime money market funds to pre-empt possible effects of the impending US money market reform in October 2016 on outflows of funds.

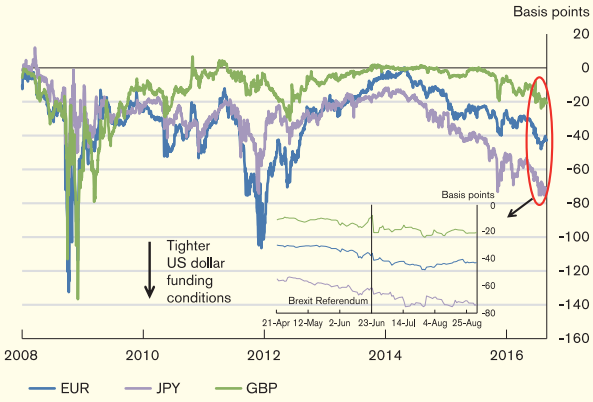
Nevertheless, the cost for longer-term US dollar funding increased somewhat after the Brexit vote, as indicated by a widened negative spread of 1-year cross-currency basis swap for major currencies against the US dollar (Chart 5.20).[49] The stronger market response in the longer-term funding market, as compared to the short-term market, may reflect that market participants remained cautious about the long-term effect of Brexit, and other political and economic risks in coming months.

Chart 5.19
3-month US dollar LIBOR-OIS spreads



Source: Bloomberg.

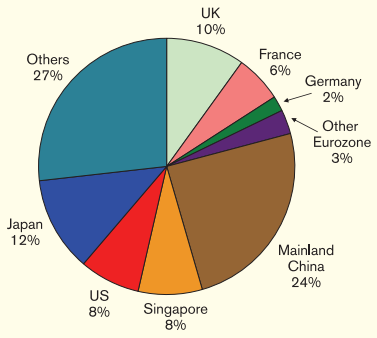
Chart 5.20
1-year cross-currency basis swap spreads of major currencies against US dollar



Source: Bloomberg.

In the longer-term, Brexit may structurally alter the interconnectedness between the UK and euro-area economies, which, in theory, could lead to significant shifts in cross-border banking flows. This could have an important implication for global financial stability in view of the unmatched role of the UK banking system in distributing international banking flows, particularly for US dollar interbank funding. Any abrupt shift in banking flows from the UK banking system could have a spillover effect to Hong Kong as the direct exposure of the Hong Kong banking sector to banks in the UK and the broader euro area is not immaterial (Chart 5.21).

Chart 5.21
External claims of the Hong Kong banking sector on banks in selected economies at the end of June 2016



Note: Figures may not add up to 100% due to rounding.
Sources: HKMA.

[49] For illustration, in a cross currency basis swap for a EUR/USD, a party borrowing US dollars (which lends EUR at the same time to the counterparty) will pay US dollar LIBOR and receive EUR LIBOR plus a spread (i.e. shown in Chart 5.20) during the contract. When the contract expires, these two parties exchange the principal. A negative spread means that the US dollar borrower accepts a lower EUR interest rate paid by the counterparty than EUR LIBOR. Therefore, a negative spread indicates a tighter US dollar funding condition, which could reflect differences in demand and supply of the two currencies involved, monetary policies and counterparty risks.

The Countercyclical capital buffer (CCyB) for Hong Kong

The CCyB is part of the internationally agreed Basel III standards and is designed to enhance the resilience of the banking sector against system-wide risks associated with excessive aggregate credit growth. Hong Kong is implementing the CCyB in line with the Basel III implementation schedule. The Monetary Authority announced on 14 January 2016 that the CCyB for Hong Kong will increase to 1.25% with effect from 1 January 2017, from the current 0.625%.[50] This is reflective of the fact that, under the Basel III phase-in arrangements, the maximum CCyB under Basel III will increase to 1.25% of banks' risk-weighted assets on 1 January 2017 from 0.625% effective from 1 January 2016.[51]

In setting the CCyB rate, the Monetary Authority considered a series of indicators (Table 5.D), including an "indicative buffer guide" (which is a metric providing a guide for CCyB rates based on credit-to-GDP and property price-to-rent gaps[52]). Based on the latest information up to the decision date at the end of the second quarter, both the credit-to-GDP gap and the property price-to-rent gap narrowed to 10.4% and 6.0% respectively, compared to 15.3% and 13.1% on the last announcement date, suggesting a slower pace of credit growth and signs of easing in the property market. However, both gaps remained at elevated levels and the risks associated with credit and property market conditions have not abated. A simple mapping from the indicative buffer guide would signal a CCyB of 1.9%, remaining higher than the 1.25% that will be in effect from 1 January 2017.

In addition, the information drawn from other reference indicators[53] was, in the view of the Monetary Authority, consistent with the signal from the indicative buffer guide.

Table 5.D
Information related to the Hong Kong jurisdictional CCyB rate

	27-Jan-15	14-Jan-16	Q2-2016
Announced CCyB rate	0.625%	1.25%	
Date effective	01/01/2016	01/01/2017	
Indicative buffer guide	2.5%	2.5%	1.9%
Basel Common Reference Guide	2.5%	2.5%	2.5%
Property Buffer Guide	2.5%	2.5%	1.2%
Composite CCyB Guide	2.5%	2.5%	1.9%
Indicative CCyB Ceiling	None	None	None
Primary gap indicators			
Credit/GDP gap	32.8%	15.3%	10.4%
Property price/rent gap	14.2%	13.1%	6.0%
Primary stress indicators			
3-month HIBOR spread (percentage points)	0.17%	0.30%	0.44%
Quarterly change in classified loan ratio (percentage points)	-0.01%	0.07%	0.08%

Note: The values of all CCyB guides, the Indicative CCyB Ceiling and their respective input variables are based on public data available prior to the corresponding decision, and may not be the most recent available as of each quarter end. (Refer to SPM CA-B-1 for explanations of the variables). If there is a CCyB announcement, the date of the announcement is shown at the top of the respective column. If there is no CCyB announcement, the quarter in which a CCyB review takes place (normally close to quarter end) is shown at the top of the column.

Source: HKMA.

Key performance indicators of the banking sector are provided in Table 5.E.

[50] Further details of the decision may be found in the press release "Monetary Authority Announces Countercyclical Capital Buffer for Hong Kong" issued on 14 January 2016 which is available on the HKMA website.

[51] Under the Basel III phase-in arrangements, the maximum CCyB rate was capped at 0.625% on 1 January 2016, with the cap rising by 0.625 percentage points each subsequent year until it reaches 2.5% on 1 January 2019.

[52] The gaps between the ratio of credit to GDP and its long term trend, and between the ratio of residential property prices to rentals and its long-term trend.

[53] These included measures of bank, corporate and household leverage; debt servicing capacity; profitability and funding conditions within the banking sector and macroeconomic imbalances.

Table 5.E
Key performance indicators of the banking sector[1] (%)

	Jun 2015	Mar 2016	Jun 2016
Interest rates			
1-month HIBOR fixing[2] (quarterly average)	0.24	0.29	0.22
3-month HIBOR fixing (quarterly average)	0.39	0.58	0.54
BLR[3] and 1-month HIBOR fixing spread (quarterly average)	4.76	4.71	4.78
BLR and 3-month HIBOR fixing spread (quarterly average)	4.61	4.42	4.46
Composite interest rate[4]	0.29	0.26	0.26
		Retail banks	
Balance sheet developments[5]			
Total deposits	1.7	1.6	0.8
Hong Kong dollar	2.5	0.3	1.9
Foreign currency	0.6	3.2	-0.5
Total loans	-0.5	0.4	2.8
Domestic lending[6]	-1.8	0.3	3.6
Loans for use outside Hong Kong[7]	5.5	0.8	-0.5
Negotiable instruments			
Negotiable certificates of deposit (NCDs) issued	-15.0	-19.6	-1.1
Negotiable debt instruments held (excluding NCDs)	6.2	3.8	1.4
Asset quality			
As a percentage of total loans[8]			
Pass loans	98.23	97.77	97.80
Special mention loans	1.28	1.45	1.40
Classified loans[9] (gross)	0.49	0.78	0.80
Classified loans (net)[10]	0.35	0.56	0.56
Overdue > 3 months and rescheduled loans	0.29	0.54	0.58
Classified loan ratio (gross) of Mainland related lending[11]	0.73	0.94	0.92
Profitability			
Loan impairment charges as a percentage of average total assets[12]	0.07	0.07	0.07
Net interest margin[12]	1.32	1.28	1.30
Cost-to-income ratio[13]	43.5	43.8	42.7
		All AIs	
Liquidity ratios (quarterly average, consolidated)			
Liquidity Coverage Ratio — category 1 institutions	131.7	152.7	158.0
Liquidity Maintenance Ratio — category 2 institutions	53.4	53.2	53.8
		Surveyed institutions	
Asset quality			
Delinquency ratio of residential mortgage loans	0.03	0.04	0.04
Credit card lending			
Delinquency ratio	0.23	0.27	0.27
Charge-off ratio — quarterly annualised	2.10	1.91	2.17
— year-to-date annualised	1.91	1.91	2.00
		All locally incorporated AIs	
Capital adequacy (consolidated)			
Common Equity Tier 1 capital ratio	13.7	14.6	15.8
Tier 1 capital ratio	14.4	15.4	16.6
Total capital ratio	17.5	18.2	19.4

Notes:

1. Figures are related to Hong Kong offices only except where otherwise stated.
2. The Hong Kong Dollar Interbank Offered Rates are released by the Hong Kong Association of Banks.
3. With reference to the rate quoted by The Hongkong and Shanghai Banking Corporation Limited.
4. The composite interest rate is a weighted average interest rate of all Hong Kong dollar interest-bearing liabilities, which include deposits from customers, amounts due to banks, negotiable certificates of deposit and other debt instruments, and Hong Kong dollar non-interest-bearing demand deposits on the books of banks. Further details can be found in the HKMA website.
5. Quarterly change.
6. Loans for use in Hong Kong plus trade finance.
7. Including "others" (i.e. unallocated).
8. Figures prior to December 2015 are related to retail banks' Hong Kong offices and overseas branches. Starting from December 2015, the coverage was expanded to include retail banks' major overseas subsidiaries.
9. Classified loans are those loans graded as "substandard", "doubtful" or "loss".
10. Net of specific provisions/individual impairment allowances.
11. Figures are related to retail banks' Hong Kong offices, Mainland branches and subsidiaries.
12. Year-to-date annualised.
13. Year-to-date figures.

Box 4
Assessing corporate leverage in Hong Kong

Introduction

The prolonged period of low interest rates in major advanced economies after the global financial crisis (GFC) raises questions about levels of corporate leverage. To shed light on this issue, this Box examines the leverage of non-financial corporates in Hong Kong.[54] We kick off the analysis by studying the ratio of corporate debt to GDP, a common aggregate indicator used for international comparison, and highlight its limitations in financial stability analysis for Hong Kong. To reveal a clearer picture of corporate leverage in Hong Kong, we complement the analysis by using firm-level accounting data of listed corporates in Hong Kong. Finally, a market-based indicator will be examined to provide a forward-looking assessment.

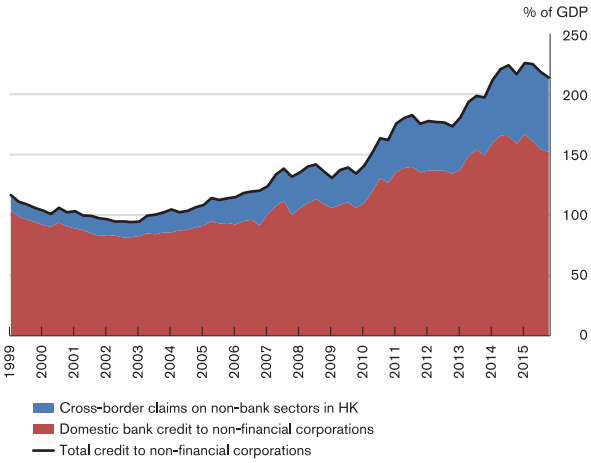
The aggregate indicator of corporate leverage and its limitation

The corporate debt to GDP ratio is a common indicator of corporate leverage for an economy. Chart B4.1 presents the ratio for Hong Kong compiled by the BIS. Here, corporate debt includes credit from banks resident in and outside Hong Kong. This information enables us to assess how domestic and cross-border credits respectively contribute to changes in corporate leverage in Hong Kong.

As expected, there has been a rising trend in corporate leverage for Hong Kong amid the low interest rate environment. The aggregate indicator increased significantly after the GFC and reached its peak of 226% in the first quarter of 2015 before stabilising to 214% at the end of 2015.

Although banks in Hong Kong remained the major fund providers to corporates in Hong Kong (i.e. see the red area), cross-border credit registered a rapid expansion (i.e. the blue area) after the GFC. The latter reflects that corporates in Hong Kong would become more vulnerable to funding shocks arising from banking sectors overseas. It may also be suggestive of higher interconnectedness between the domestic and foreign banking sectors through their common exposure to corporates in Hong Kong. As shown, the aggregate indicator can provide important information to policymakers.

Chart B4.1
Aggregate corporate leverage in Hong Kong



Source: BIS.

However, caution should be exercised when interpreting the level of this aggregate indicator, as it tends to overstate corporate leverage in Hong Kong. Specifically, the aggregate indicator, which is conceptually akin to a debt-to-income ratio, attempts to measure the ability of corporates in Hong Kong to service their debt by income. However, Hong Kong's GDP (i.e. the denominator) may not be a suitable proxy for income of corporate borrowers of banks in Hong Kong. This is mainly due to the fact that Hong Kong is an international financial centre and therefore many multinational and non-local

[54] Throughout the analysis, corporates refer to non-financial corporates which exclude banks, financial service firms, insurance companies and real estate investment trusts.

corporates borrow their funds from Hong Kong to finance their overseas operations.[55] Their economic activities and thus income are not fully reflected in Hong Kong's GDP.

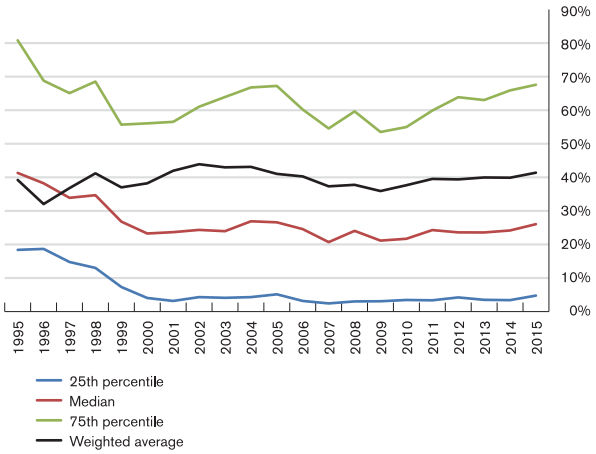
In addition, similar to other aggregate measures, the corporate debt to GDP ratio cannot reveal which types of corporates are the main drivers for the rising corporate debt in Hong Kong.

Micro evidence from corporates listed in Hong Kong

Given the limitations of the aggregate indicator, we complement the analysis by using accounting data of corporates listed in Hong Kong. To reveal corporate leverage more accurately, we study their debt-to-equity ratios. Since local and non-local corporates listed in Hong Kong may experience different developments in respect of leverage, we split the whole sample into two sub-samples, i.e. corporates domiciled in Hong Kong and corporates domiciled outside Hong Kong (henceforth referred to as local and non-local corporates respectively).[56]

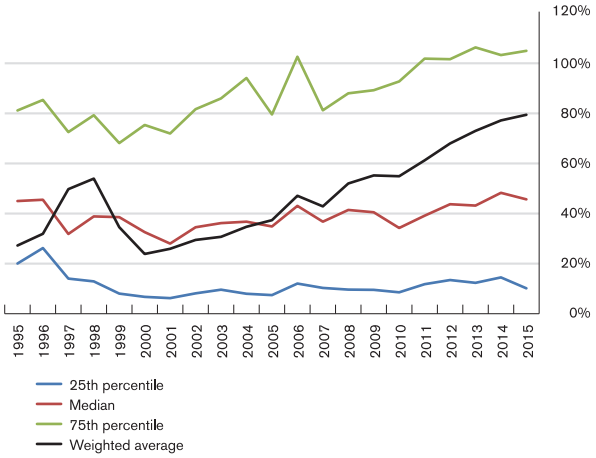
Charts B4.2 and B4.3 present the distribution of leverage for local and non-local corporates respectively. The two sub-samples demonstrate notable different developments in respect of leverage. For local corporates, the average leverage remained broadly steady at around 40%, while the leverage for highly leveraged local corporates (i.e. the 75th percentile, see the green line in Chart B4.2) increased after the GFC. Nevertheless, it remained lower than the peak right before the Asian financial crisis.

Chart B4.2
Debt-to-equity ratios of local corporates



Source: HKMA staff estimates based on data from Bloomberg.

Chart B4.3
Debt-to-equity ratios of non-local corporates



Source: HKMA staff estimates based on data from Bloomberg.

By contrast, there was a broad-based increase in leverage for non-local corporates from 2010 (Chart B4.3). The average leverage for non-local corporates increased markedly to 79% in 2015 from 55% in 2010. For highly leveraged non-local corporates (i.e. the 75th percentile), their debt-to-equity ratios exceeded 100% at the end of 2015, meaning that they fund their business primarily by debt.

[55] Based on annual reports of some large banks in Hong Kong, the average share of loans to customers located outside Hong Kong accounted for about 25% of their total loans at the end of 2015.

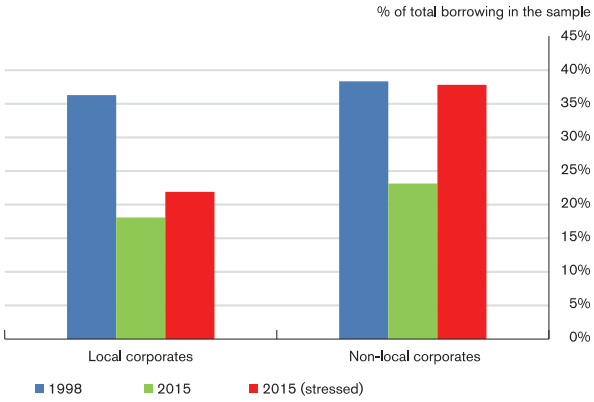
[56] There were 1,917 listed corporates in our sample spanning from 1995 to 2015, of which 1,267 are domiciled in Hong Kong while the rest are domiciled outside Hong Kong.

The rising leverage of non-local corporates poses a question on their debt-servicing ability. Debt-at-risk (DaR)[57], which is defined as the amount of debt for those corporates with an interest coverage ratio (ICR) lower than one (i.e. corporates with insufficient earnings[58] in a year to cover interest expenses in that year), as a share of total corporate debt can help answer this question.

Chart B4.4 presents the DaR for the two sub-samples based on their accounting data in 2015 (i.e. the green bars). Their DaRs after the Asian financial crisis (i.e. the blue bars) and under a hypothetical stress scenario (i.e. the red bars) are also estimated for comparison. When estimating the stressed DaRs, we assume that corporate earnings and interest expenses in 2015 declined by 26% and increased by 14% respectively, which essentially resembles what happened during the Asian financial crisis.

Consistent with the findings shown in Charts B4.2 and B4.3, non-local corporates would be more exposed to debt-servicing problems should rising interest rates and/or deteriorations of earnings occur. This can be seen by noting that although currently the DaR for both local and non-local corporates stayed at a relatively low level, the stressed DaR for non-local corporates would increase drastically to a level similar to that which occurred during the Asian financial crisis.

Chart B4.4
Debt-at-risk of local and non-local corporates in Hong Kong



Source: HKMA staff estimates based on data from Bloomberg.

A market-based assessment

Although firm-level accounting data can help assess corporate leverage, the backward-looking nature and the time lag in data availability would limit their usefulness, particularly during periods when financial and economic conditions are more volatile. Market-based default risk indicators, which extract information from high-frequency financial data e.g. stock prices, have been increasingly adopted in financial stability analysis. One common measure is the distance-to-default (DTD).[59] By construction, a lower DTD implies a higher default risk.

Focusing on corporates with lower debt-servicing ability, Chart B4.5 shows the median DTD for the two groups of corporates with an ICR lower than one. Before the second half of 2015, the market-based indicator reflected a lower default risk for non-local corporates than their local counterparts, which is contrary to the previous assessment based on Chart B4.4. However, the more positive assessment for non-local

[57] The calculation of debt-at-risk follows the same methodology used in the IMF *Global Financial Stability Report* issued in April 2016.

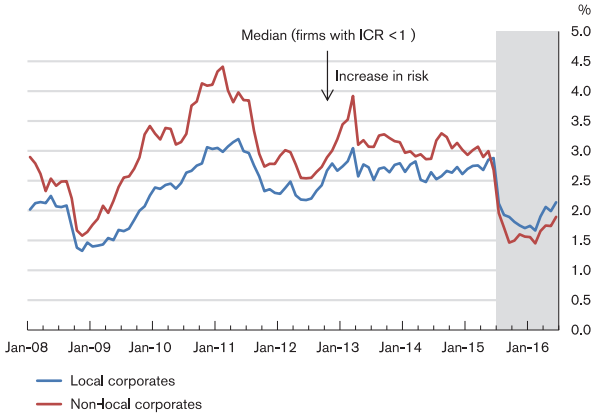
[58] Earnings before interest and taxes.

[59] The distance-to-default is a market based default risk indicator based on the framework by R. Merton (1974), "On the pricing of corporate debt: the risk structure of interest rates", *Journal of Finance*, Vol. 29, pages 449-470, in which equity prices, equity volatility, and companies' financial liabilities are the determinants of default risk. In essence, it measures the difference between the asset value of a firm and a default threshold in terms of the firm's asset volatility.

corporates by the DTD is consistent with their higher stock price valuations which may reflect that financial market participants might expect better growth prospects for non-local corporates, particularly for Mainland corporates.

It was not until the second half of 2015 that the global financial market turmoil triggered by the Mainland stock market crash led to a reappraisal of corporate fundamentals by financial market participants. As a result, non-local corporates turned to show a higher average default risk than local corporates. Although tentative signs of improvement in default risk appeared for both groups of corporates in the second quarter of 2016, the sustainability of improvement remains a question given the fragile global business environment.

Chart B4.5
Median distance-to-default of corporates with an ICR lower than one



Source: HKMA staff estimates based on data from Bloomberg.

Conclusion

Assessing corporate leverage has long played an important part in financial stability analysis. This Box conducts an assessment of corporate leverage in Hong Kong based on different indicators from various data sources in order to reveal a clear picture. Overall, the assessment supports the view that non-local corporates in Hong Kong have played a bigger role in driving up the aggregate corporate leverage in Hong Kong after the GFC. Some of these non-local corporates in Hong Kong could face significant debt-servicing problems when the US interest rate rises resume.

Looking forward, if the already fragile global economic environment deteriorates further, non-local corporates' earnings could be hit harder and quicker, putting their debt-servicing ability to the test. Meanwhile, local corporates are far from immune to this unfavourable environment. Therefore, banks should assess how the possible deterioration of external environments could have an impact on the asset quality of their corporate exposure.

Glossary of terms

Aggregate Balance
The sum of balances in the clearing accounts and reserve accounts maintained by commercial banks with the central bank. In Hong Kong, this refers to the sum of the balances in the clearing accounts maintained by the banks with the HKMA for settling interbank payments and payments between banks and the HKMA. The Aggregate Balance represents the level of interbank liquidity, and is a part of the Monetary Base.

Authorized Institution (AI)
An institution authorized under the Banking Ordinance to carry on the business of taking deposits. Hong Kong maintains a Three-tier Banking System, which comprises licensed banks, restricted licence banks and deposit-taking companies.

Best Lending Rate
A benchmark interest rate that banks use to price loans. In Hong Kong, the Best Lending Rate is used as a base for quoting interest rates on mortgage loans.

Certificates of Indebtedness (CIs)
Certificates issued by the Financial Secretary under the Exchange Fund Ordinance, to be held by note-issuing banks as cover for the banknotes they issue.

Composite Consumer Price Index (CCPI)
The headline consumer price index (CPI) for Hong Kong. The Census and Statistics Department compiles three separate CPI series relating to households in different expenditure ranges. The CPI(A) relates to about 50% of households in the relatively low expenditure range; the CPI(B) relates to the next 30% of households in the medium expenditure range; and the CPI(C) relates to the next 10% of households in the relatively high expenditure range. The Composite CPI is compiled based on the aggregate expenditure pattern of all of the above households taken together.

Composite Interest Rate
The composite interest rate is a weighted average interest rate of all Hong Kong dollar interest bearing liabilities, which include deposits from customers, amounts due to banks, negotiable certificates of deposit and other debt instruments, and Hong Kong dollar non-interest bearing demand deposits on the books of banks. Data from retail banks, which account for about 90% of the total customers' deposits in the banking sector, are used in the calculation. It should be noted that the composite interest rate represents only average interest expenses. There are various other costs involved in the making of a loan, such as operating costs (e.g. staff and rental expenses), credit cost and hedging cost, which are not covered by the composite interest rate.

Convertibility Undertaking (CU)
An undertaking by a central bank or currency board to convert domestic currency into foreign currency and vice versa at a fixed exchange rate. In Hong Kong, the HKMA operates Convertibility Undertakings on both the strong side and the weak side. Under the strong-side Convertibility Undertaking, the HKMA undertakes

to buy US dollars from licensed banks at 7.75. Under the weak-side Convertibility Undertaking, the HKMA undertakes to sell US dollars at 7.85. Within the Convertibility Zone between 7.75 and 7.85, the HKMA may choose to conduct market operations consistent with Currency Board principles with the aim of promoting the smooth functioning of the money and foreign exchange markets.

Convertibility Zone

The Hong Kong dollar-US dollar exchange rate band, defined by the levels of the strong- and weak-side Convertibility Undertakings, within which the HKMA may choose to conduct market operations consistent with Currency Board principles.

Exchange Fund Bills and Notes (EFBN)

Debt instruments issued by the HKMA for the account of the Exchange Fund. These instruments are fully backed by the foreign reserves. The HKMA has undertaken that new Exchange Fund paper will only be issued when there is an inflow of funds, thus enabling the additional paper to be fully backed by the foreign reserves. Since 1 April 1999, interest payments on Exchange Fund paper have been allowed to expand the Monetary Base. Additional Exchange Fund paper is issued to absorb such interest payments. This is consistent with the Currency Board discipline since interest payments on Exchange Fund paper are backed by interest income on the US dollar assets backing the Monetary Base.

Monetary Base

A part of the monetary liabilities of a central bank. The monetary base is defined, at the minimum, as the sum of the currency in circulation (banknotes and coins) and the balance of the banking system held with the central bank (the reserve balance or the clearing balance). In Hong Kong, the Monetary Base comprises Certificates of Indebtedness (for backing the banknotes issued by the note-issuing banks), government-issued currency in circulation, the balance of the clearing accounts of banks kept with the HKMA, and Exchange Fund Bills and Notes.

Nominal and Real Effective Exchange Rate (NEER and REER)

An indicator of the overall exchange rate value of the Hong Kong dollar against a basket of currencies of Hong Kong's principal trading partners. The nominal effective exchange rate (NEER) is a weighted average of the exchange rates between Hong Kong and its principal trading partners. The real effective exchange rate (REER) is obtained by adjusting the NEER for relative movements in the seasonally adjusted consumer price indices of those selected trading partners.

Abbreviations

3m moving average	Three-month moving average
3m-on-3m	Three-month-on-three-month
ASEAN	Association of Southeast Asian Nations
AIs	Authorized Institutions
BIS	Bank for International Settlements
bn	Billion
BLR	Best lending rate
BoJ	Bank of Japan
BoP	Balance of Payments
BSD	Buyer's stamp duty
CAR	Capital Adequacy Ratio
CBRC	China Banking Regulatory Commission
CCPI	Composite Consumer Price Index
CCyB	Countercyclical capital buffer
CDs	Certificates of deposit
CDS	Credit default swap
CFETS	China Foreign Exchange Trade System
CIs	Certificates of Indebtedness
CNH	Offshore renminbi in Hong Kong
CNY	Onshore renminbi
C&SD	Census and Statistics Department
CPI	Consumer Price Index
CU	Convertibility Undertaking
DF	Deliverable forward
DI	Direct investment
DSD	Doubling of the ad valorem stamp duty rates
DSR	Debt servicing ratio
ECB	European Central Bank
EBIT	Earnings before interest and taxes
EFBN	Exchange Fund Bills and Notes
EMEs	Emerging Market Economies

EPIFs	External primary income flows
ETFs	Exchange traded funds
EU	European Union
EUR	Euro
FDI	Foreign direct investment
Fed	Federal Reserve
FOMC	Federal Open Market Committee
FSB	Financial Stability Board
FX	Foreign exchange
GBs	Government Bonds
GDP	Gross Domestic Product
GFC	Global Financial Crisis
G-SIBs	Global systemically important banks
HIBOR	Hong Kong Interbank Offered Rate
HK	Hong Kong
HKD	Hong Kong dollar
HKEx	The Hong Kong Exchanges and Clearing Limited
HKMA	Hong Kong Monetary Authority
HK$M3	Hong Kong dollar broad money supply
HSCEI	Hang Seng China Enterprises Index
HSI	Hang Seng Index
IFC	International Finance Corporation
IMF	International Monetary Fund
IPO	Initial Public Offering
IT	Information technology
LCR	Liquidity Coverage Ratio
LEI	Composite index of leading economic indicators
LIBOR	London Interbank Offered Rate
LMR	Liquidity Maintenance Ratio
lhs	Left-hand scale
IRB	Internal-Ratings Based Approach
LTD	Loan-to-deposit
LTV	Loan-to-value ratio
MCI	Monetary condition index
mn	Million
MDBs	Multilateral Development Banks

MLF	Medium-term Lending Facility
MRF	Mutual Recognition of Funds
MTN	Medium-term Note
NBS	National Bureau of Statistics
NCD	Negotiable certificate of deposit
NEER	Nominal effective exchange rate
NIE	Newly industrialised economies
NPL	Non-performing loan
OIS	Overnight indexed swap
OTC	Over-the-counter
p.a.	Per annum
PBoC	People's Bank of China
PMI	Purchasing Managers' Index
PPI	Producer Price Index
PSL	Pledged Supplementary Lending
qoq	Quarter-on-quarter
QE	Quantitative Easing
QQE	Quantitative and Qualitative Easing
R&VD	Rating and Valuation Department
REER	Real effective exchange rate
Repo	Repurchase operation
rhs	Right-hand scale
RMB	Renminbi
ROA	Return on assets
RTGS	Real time gross settlement
SAFE	State Administration of Foreign Exchange
SDR	Special Drawing Rights
SHIBOR	Shanghai Interbank Offered Rate
SLO	Short-term Liquidity operation
SME	Small and medium-sized enterprise
SOEs	State-owned enterprises
SSD	Special stamp duty
SSE	Shanghai Stock Exchange
SWIFTs	Society for Worldwide Interbank Financial Telecommunication
S&P	Sale and Purchase Agreements of Building Units

S&P 500	Standard & Poor's 500 Index
TLTRO	Targeted Longer-Term Refinancing Operation
TWI	Trade Weighted Index
UK	United Kingdom
US	United States
USD	US dollar
VAR	Vector auto-regression
VHSI	HSI Volatility Index
VIX	Chicago Board Options Exchange Market Volatility Index
WMPs	Wealth management products
yoy	Year-on-year
P2P	Peer-to-peer

Full text of this Report is available on the
HKMA website at **www.hkma.gov.hk.**

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